



## Appendix A

### RF Test Data for BT (Conducted Measurement)

**Product Name: BLUETOOTH SPEAKER**

**Trade Mark: Fiodio**

**Test Model: F-510**

#### Environmental Conditions

Temperature:	25 ° C
Relative Humidity:	50%
ATM Pressure:	100.0 kPa
Test Engineer:	Bill Zhu
Supervised by:	Li huan



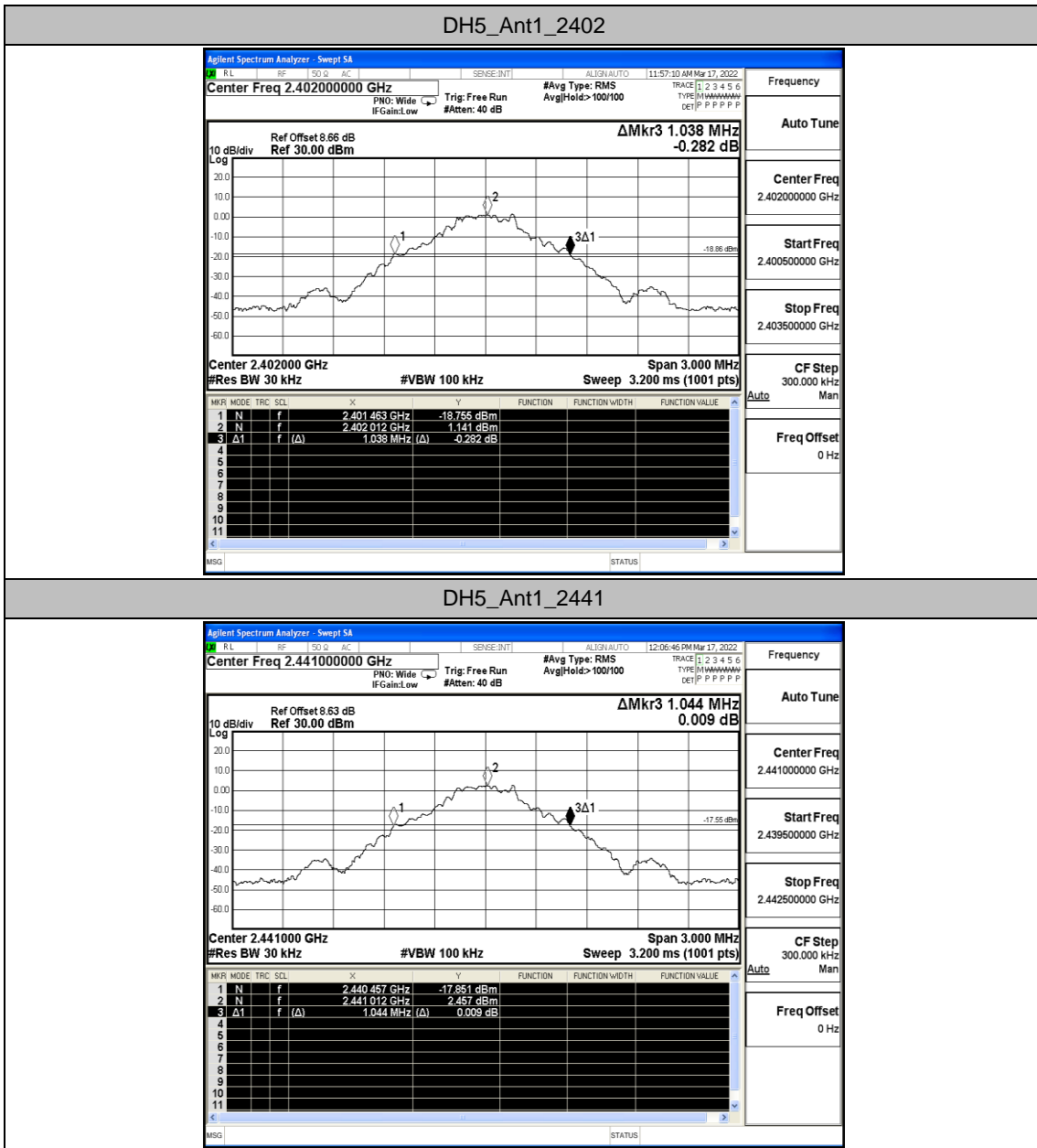
## Appendix A.1.1: 20dB Emission Bandwidth

### Test Result

TestMode	Antenna	Channel	20db EBW[MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
DH5	Ant1	2402	1.038	2401.463	2402.501	---	---
		2441	1.044	2440.457	2441.501	---	---
		2480	1.041	2479.460	2480.501	---	---
2DH5	Ant1	2402	1.296	2401.358	2402.654	---	---
		2441	1.293	2440.358	2441.651	---	---
		2480	1.290	2479.358	2480.648	---	---
3DH5	Ant1	2402	1.293	2401.349	2402.642	---	---
		2441	1.299	2440.346	2441.645	---	---
		2480	1.311	2479.343	2480.654	---	---

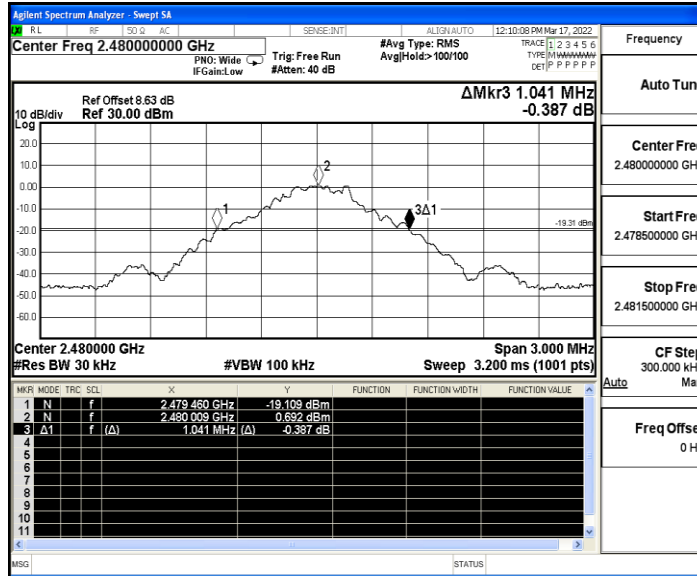


### Test Graphs

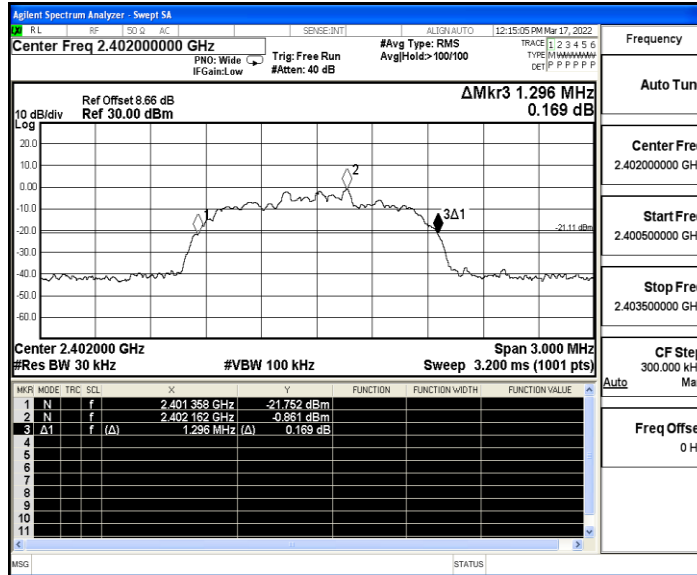




DH5\_Ant1\_2480

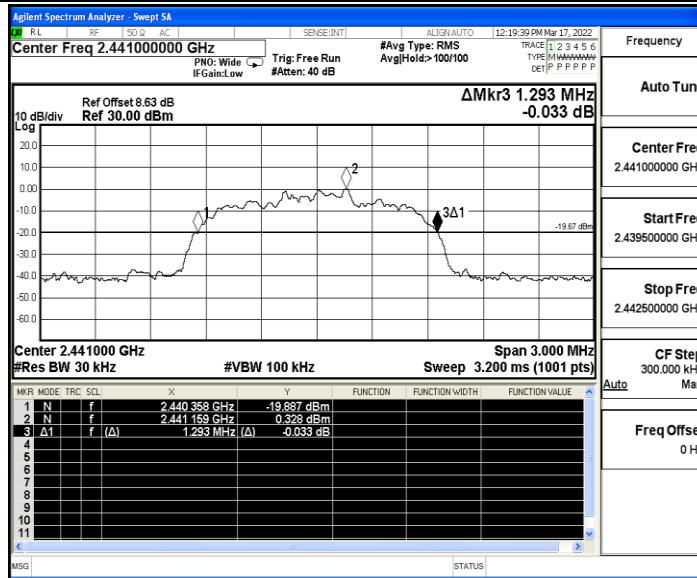


2DH5\_Ant1\_2402

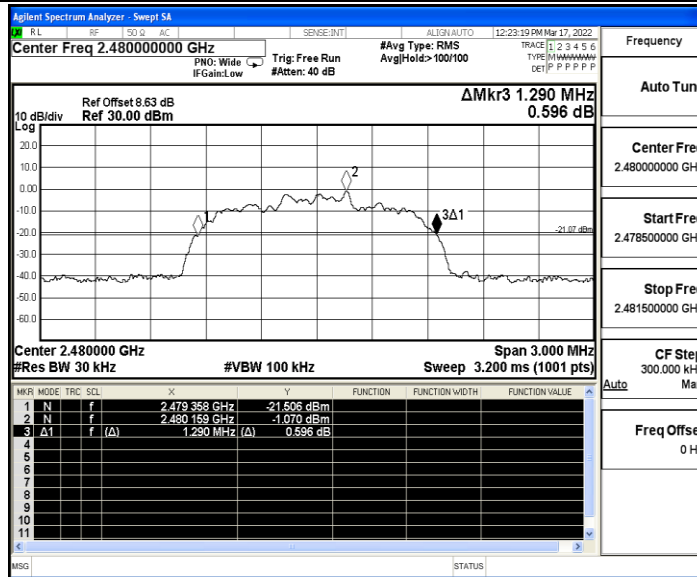




2DH5\_Ant1\_2441

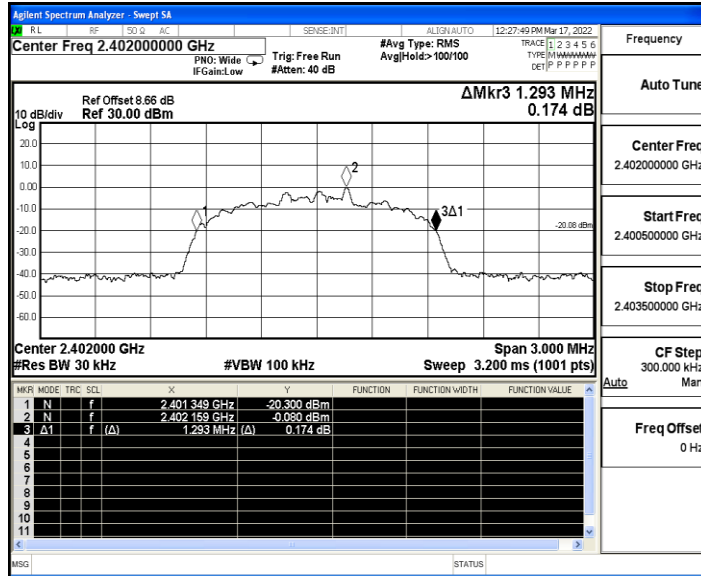


2DH5\_Ant1\_2480

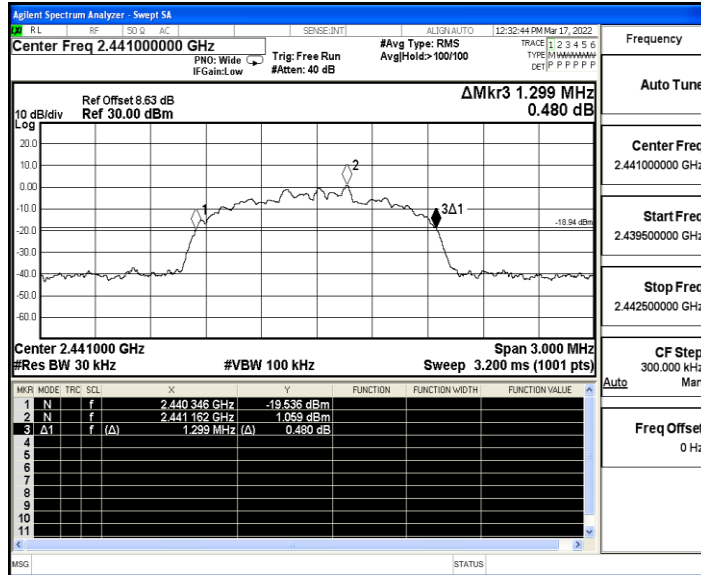




3DH5\_Ant1\_2402

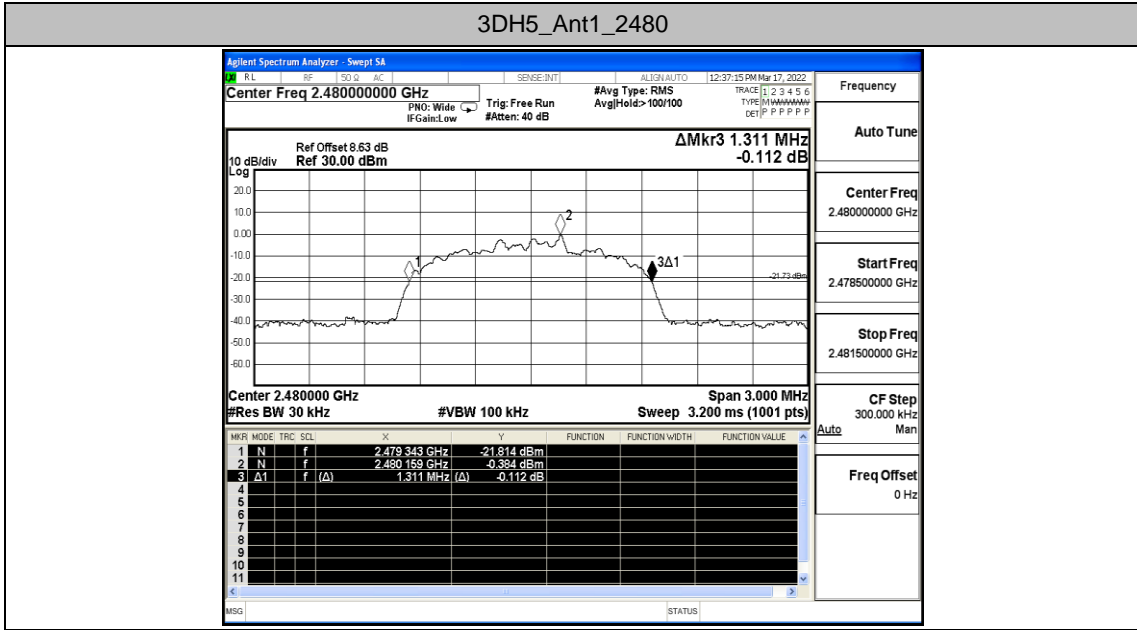


3DH5\_Ant1\_2441





3DH5\_Ant1\_2480





## Appendix A.1.2: Occupied Channel Bandwidth

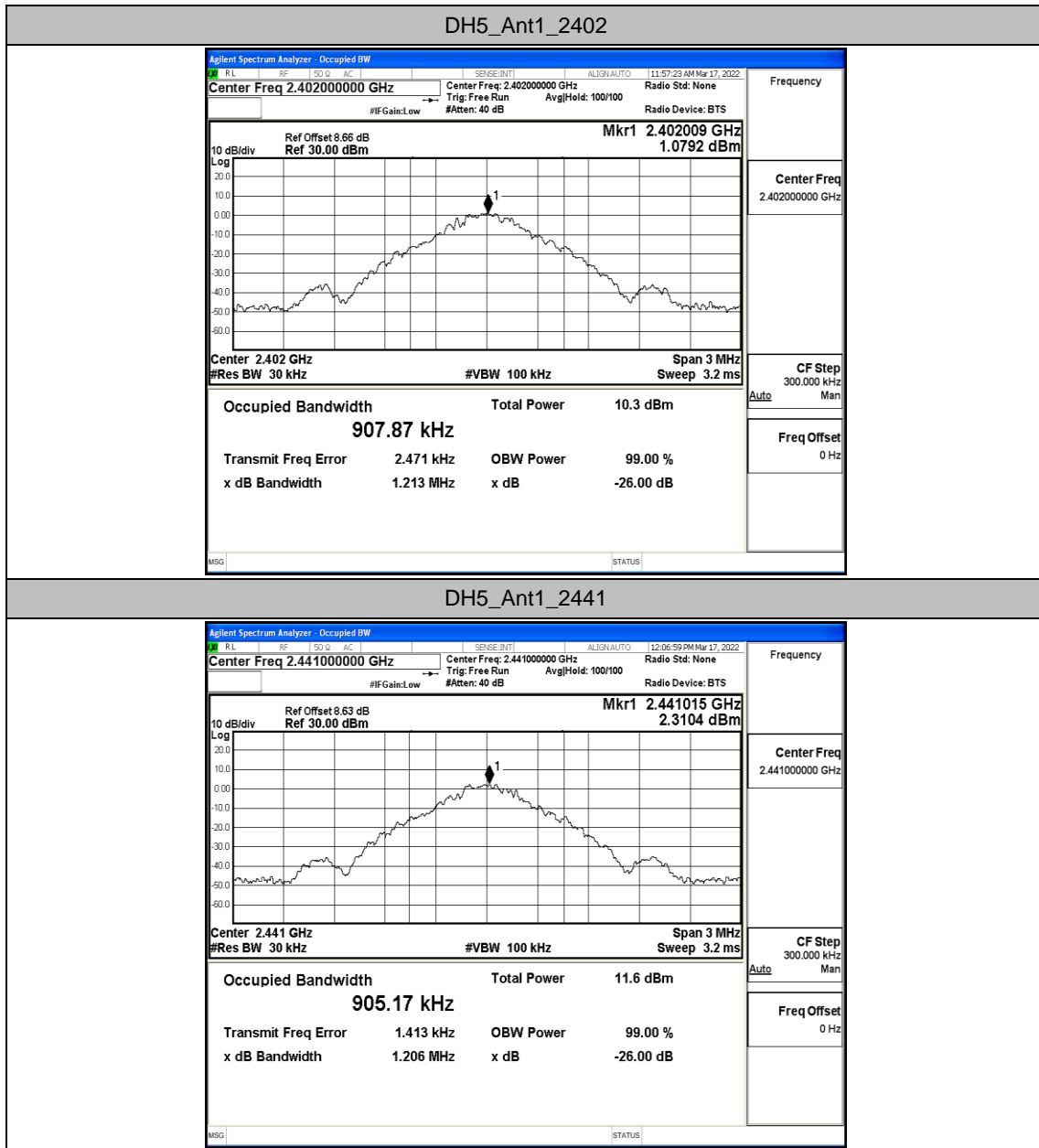
### Test Result

TestMode	Antenna	Channel	OCB [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
DH5	Ant1	2402	0.90787	2401.549	2402.456	---	---
		2441	0.90517	2440.549	2441.454	---	---
		2480	0.89689	2479.549	2480.446	---	---
2DH5	Ant1	2402	1.1916	2401.403	2402.595	---	---
		2441	1.1804	2440.405	2441.585	---	---
		2480	1.1813	2479.404	2480.585	---	---
3DH5	Ant1	2402	1.2012	2401.392	2402.594	---	---
		2441	1.1998	2440.393	2441.593	---	---
		2480	1.1829	2479.409	2480.592	---	---



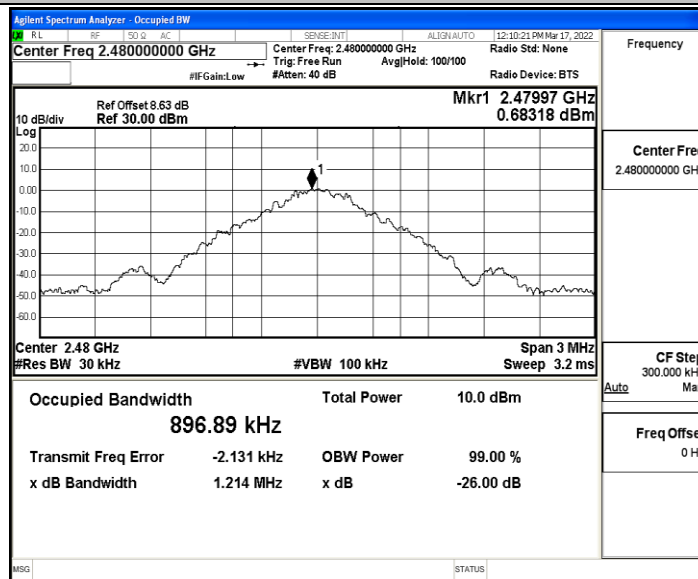


### Test Graphs

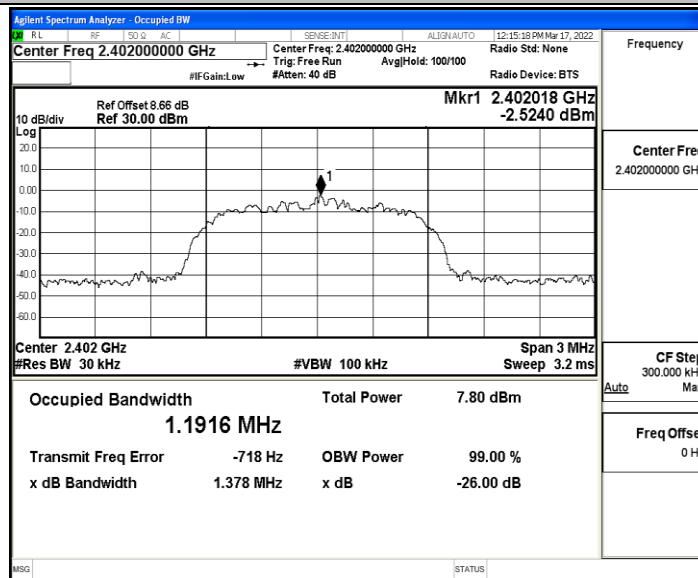




DH5\_Ant1\_2480

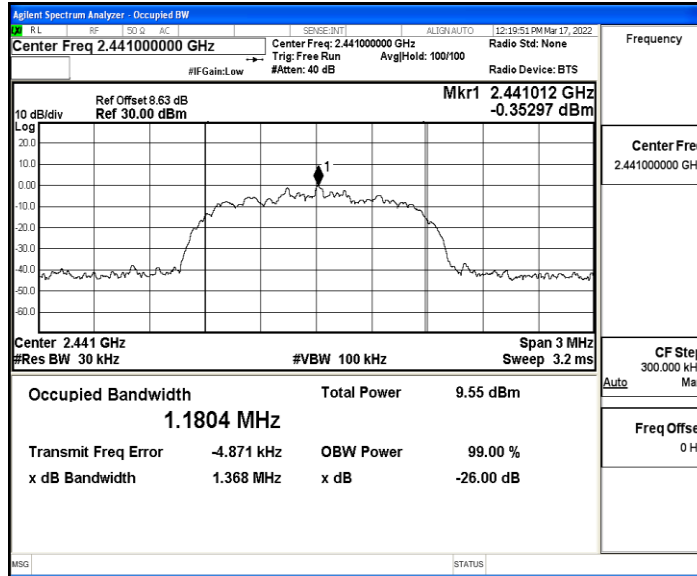


2DH5\_Ant1\_2402

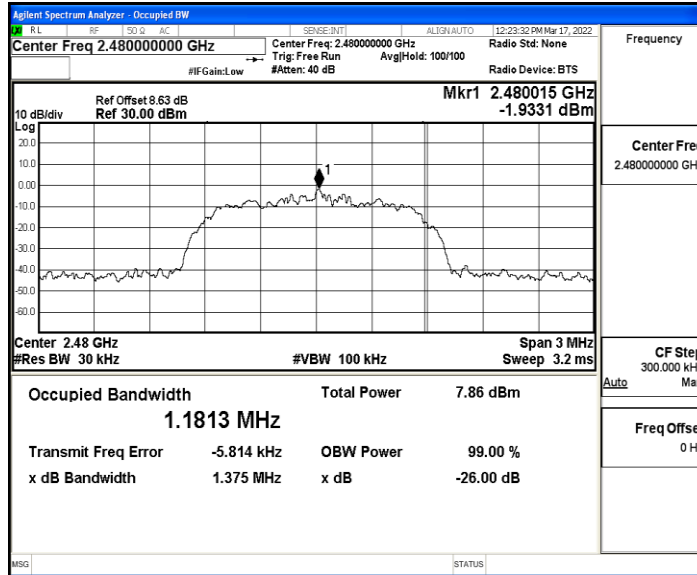




2DH5\_Ant1\_2441

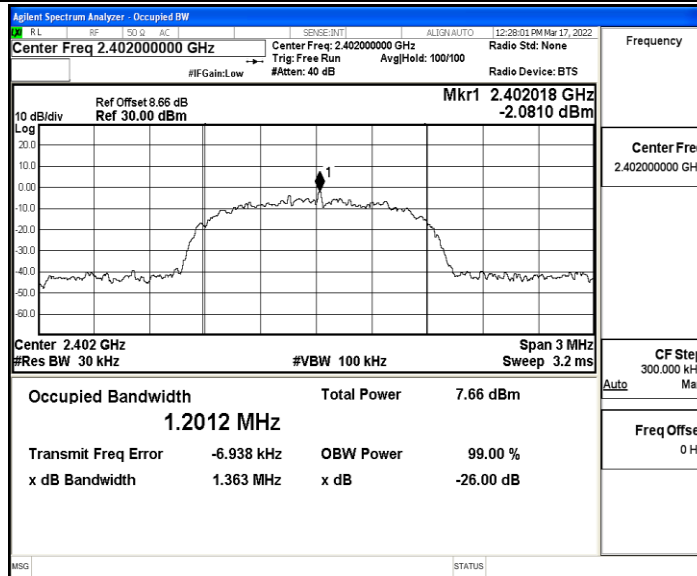


2DH5\_Ant1\_2480

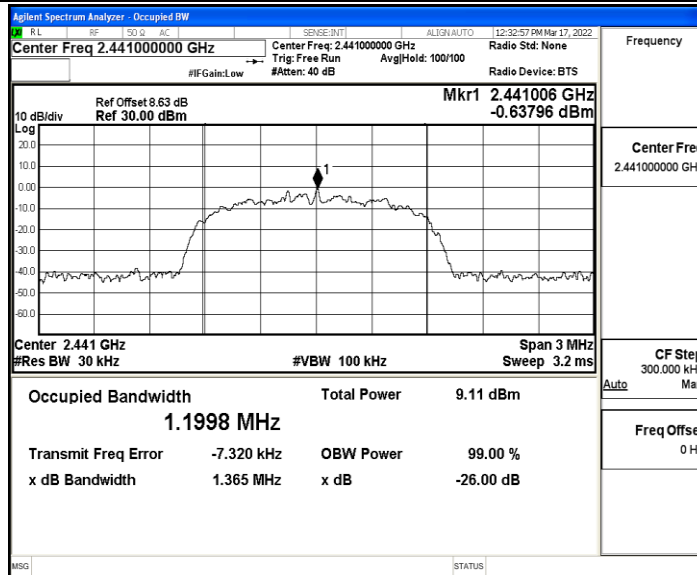




### 3DH5\_Ant1\_2402

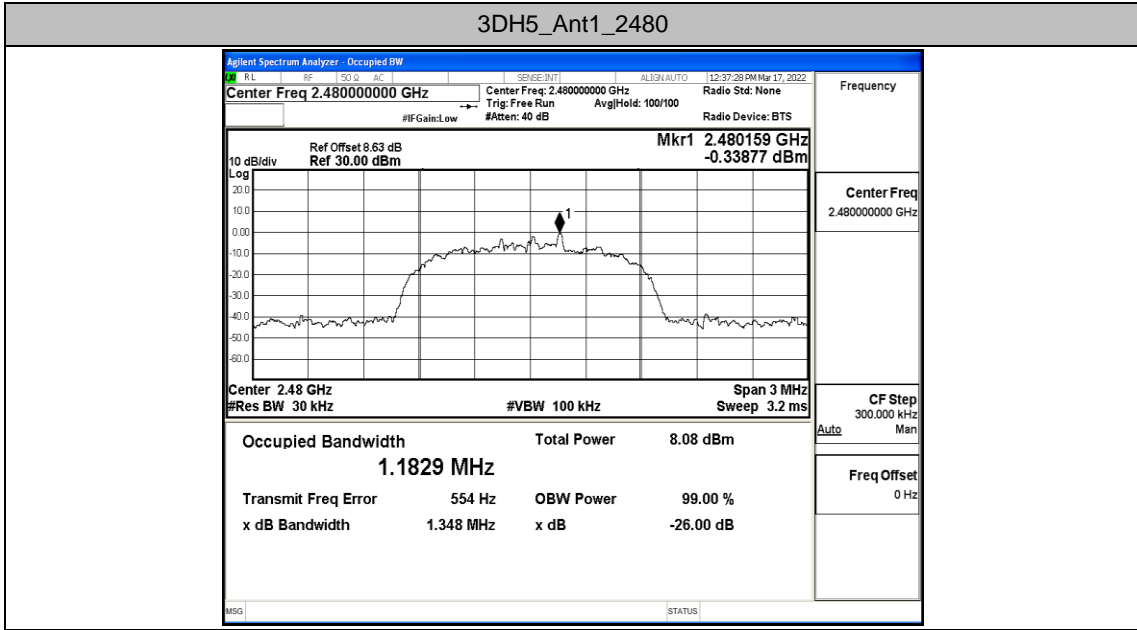


### 3DH5\_Ant1\_2441





3DH5\_Ant1\_2480





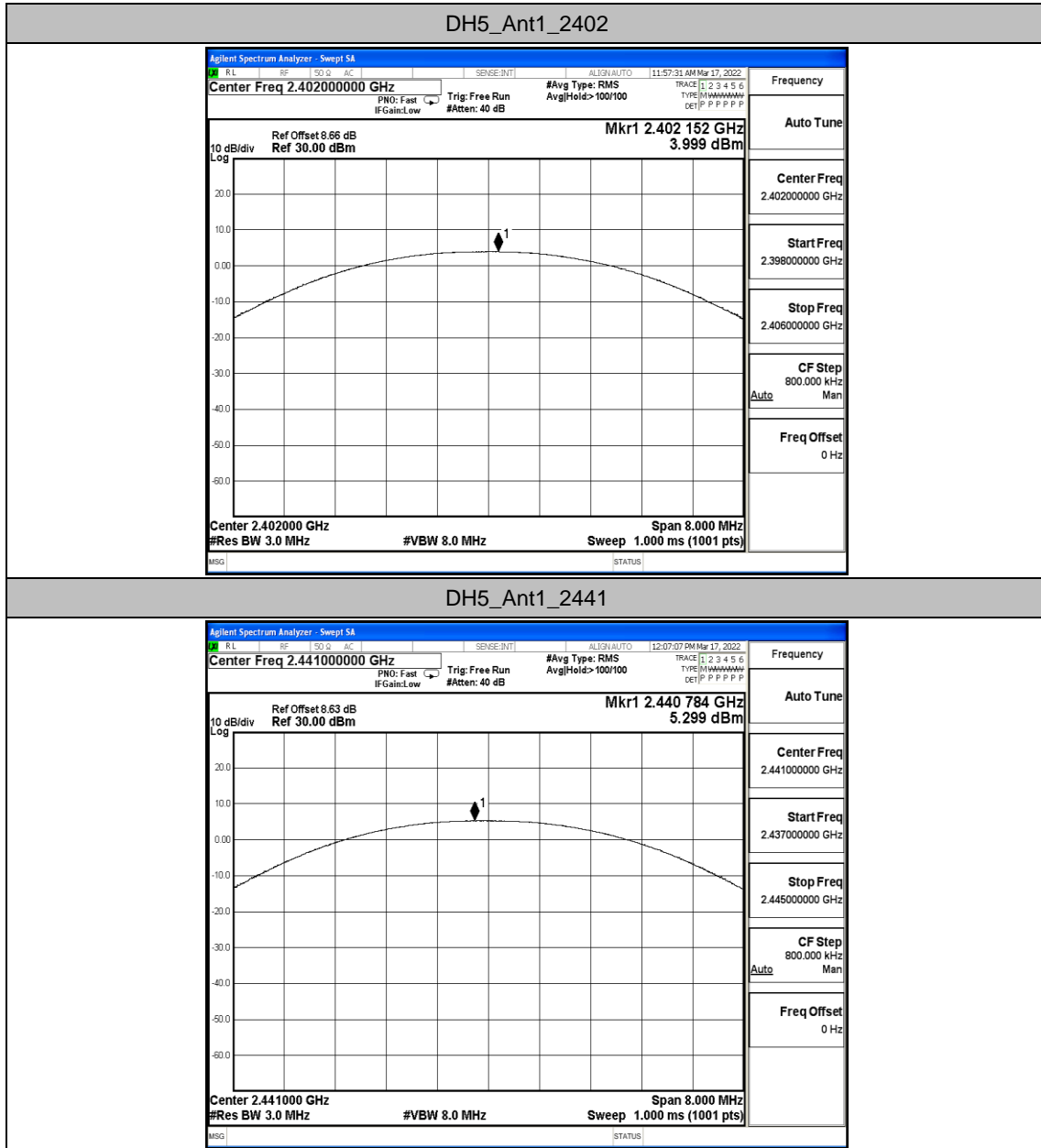
## Appendix A.2: Maximum conducted output power

### Test Result

TestMode	Antenna	Channel	Result[dBm]	Limit[dBm]	Verdict
DH5	Ant1	2402	4	≤20.97	PASS
		2441	5.3	≤20.97	PASS
		2480	3.58	≤20.97	PASS
2DH5	Ant1	2402	3.02	≤20.97	PASS
		2441	4.43	≤20.97	PASS
		2480	2.79	≤20.97	PASS
3DH5	Ant1	2402	3.19	≤20.97	PASS
		2441	4.58	≤20.97	PASS
		2480	2.98	≤20.97	PASS

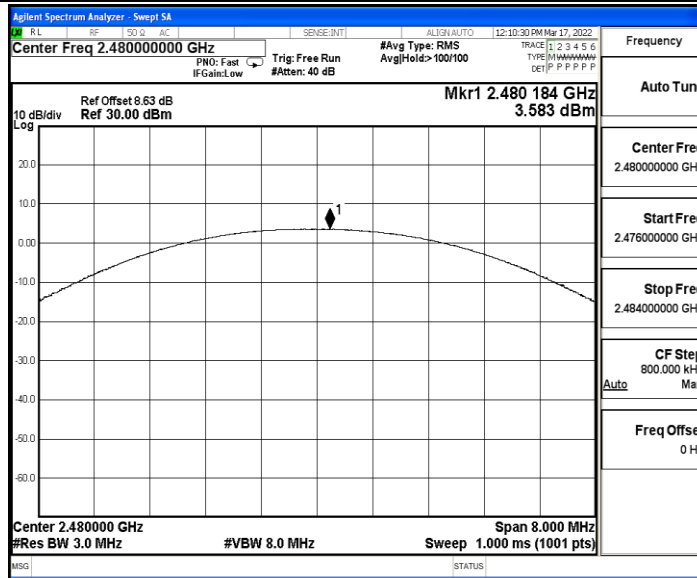


### Test Graphs

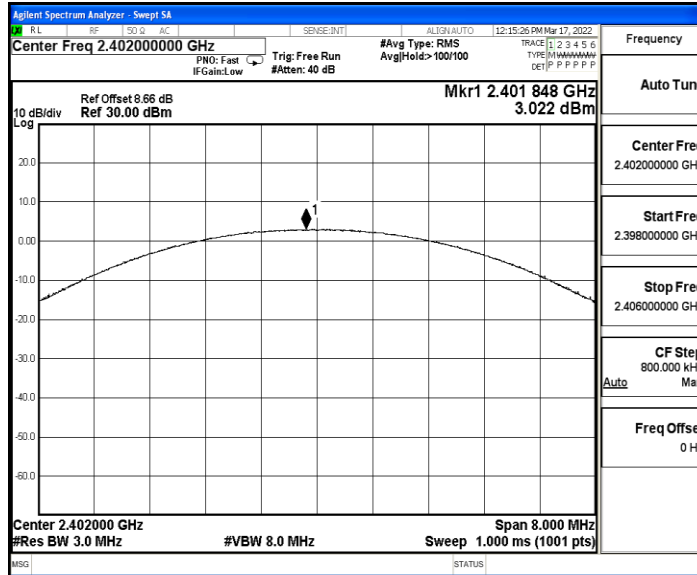




### DH5\_Ant1\_2480



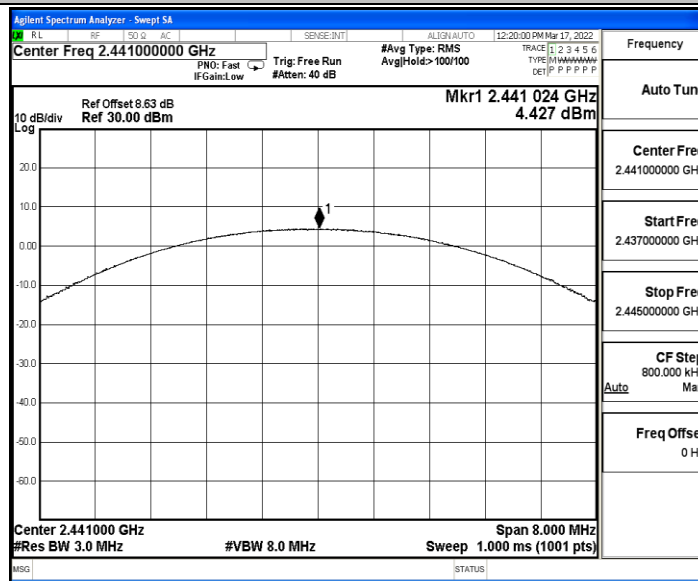
### 2DH5\_Ant1\_2402



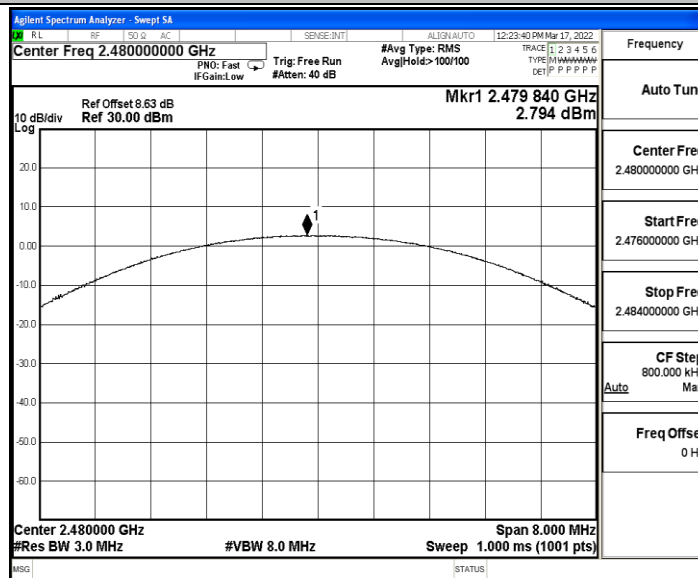




### 2DH5\_Ant1\_2441

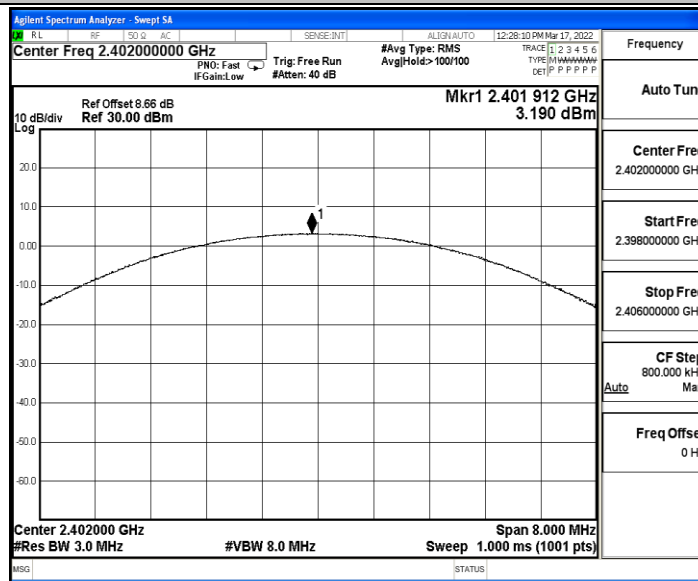


### 2DH5\_Ant1\_2480

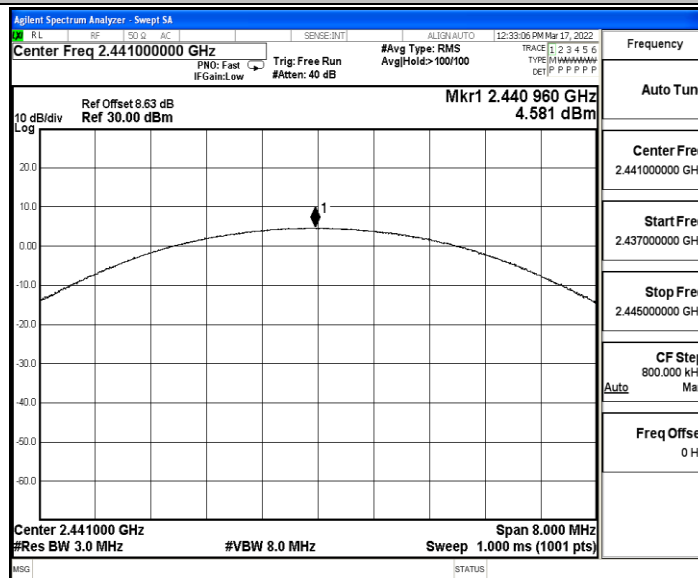




### 3DH5\_Ant1\_2402

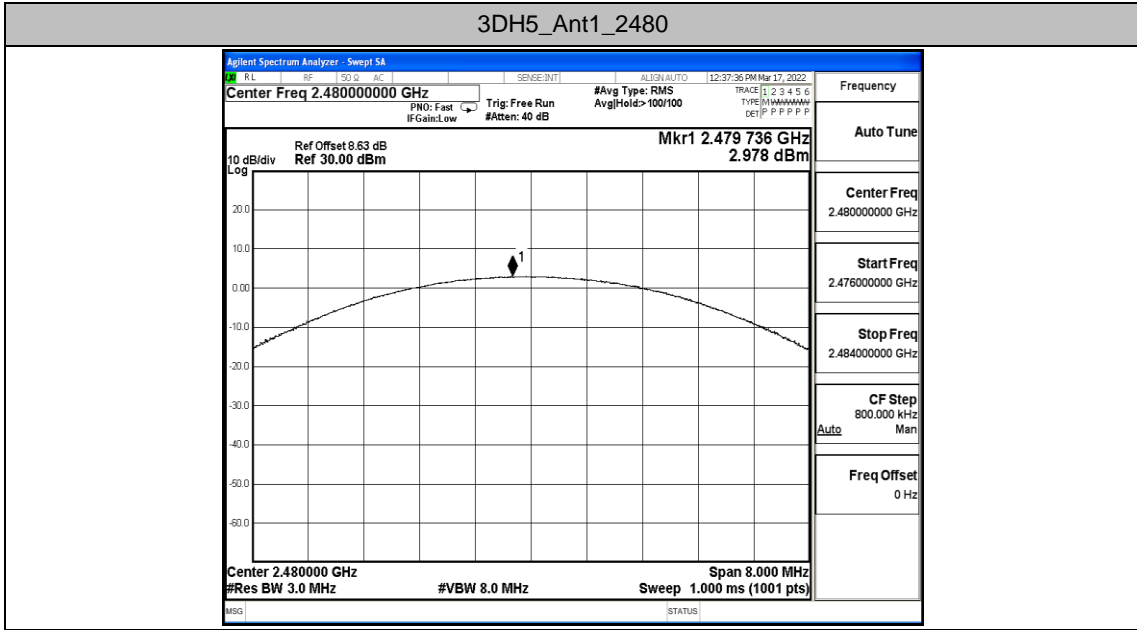


### 3DH5\_Ant1\_2441





3DH5\_Ant1\_2480





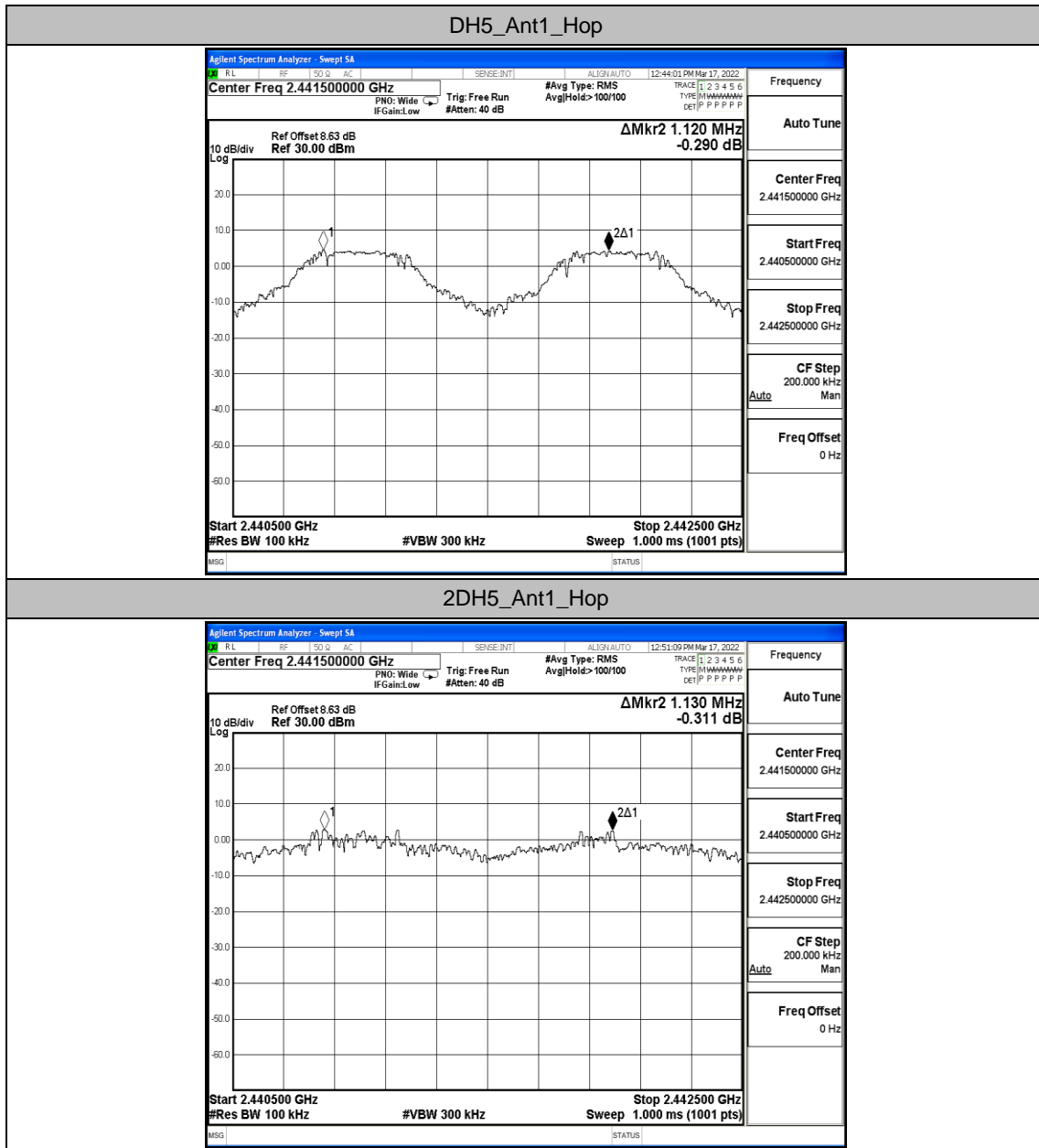
## Appendix A.3: Carrier frequency separation

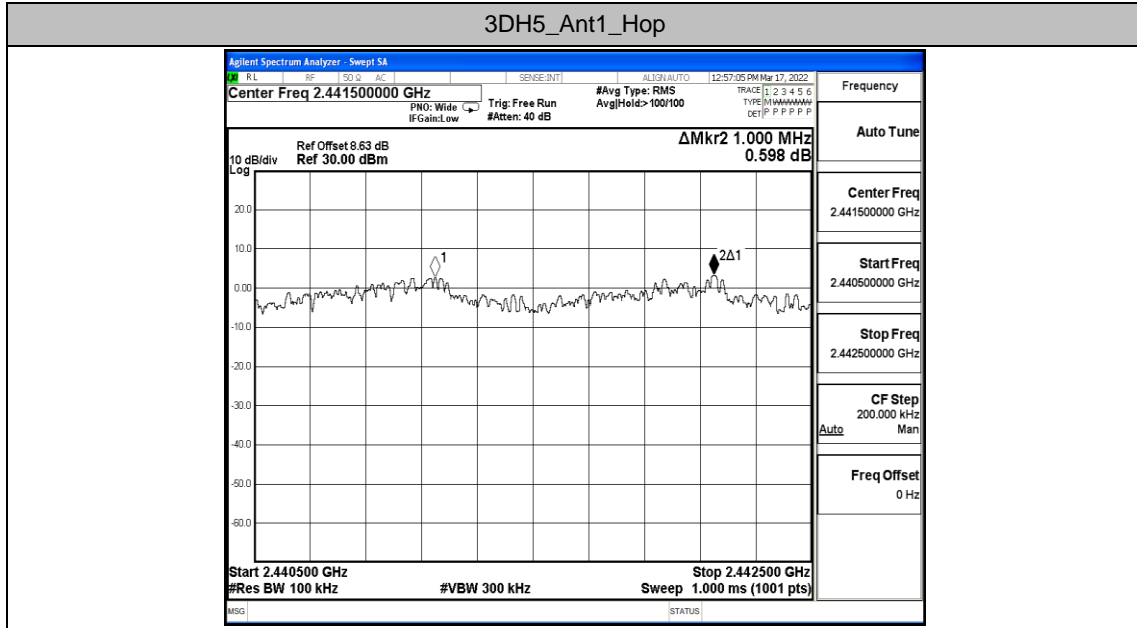
### Test Result

TestMode	Antenna	Channel	Result[MHz]	Limit[MHz]	Verdict
DH5	Ant1	Hop	1.12	≥0.696	PASS
2DH5	Ant1	Hop	1.13	≥0.864	PASS
3DH5	Ant1	Hop	1	≥0.874	PASS



### Test Graphs







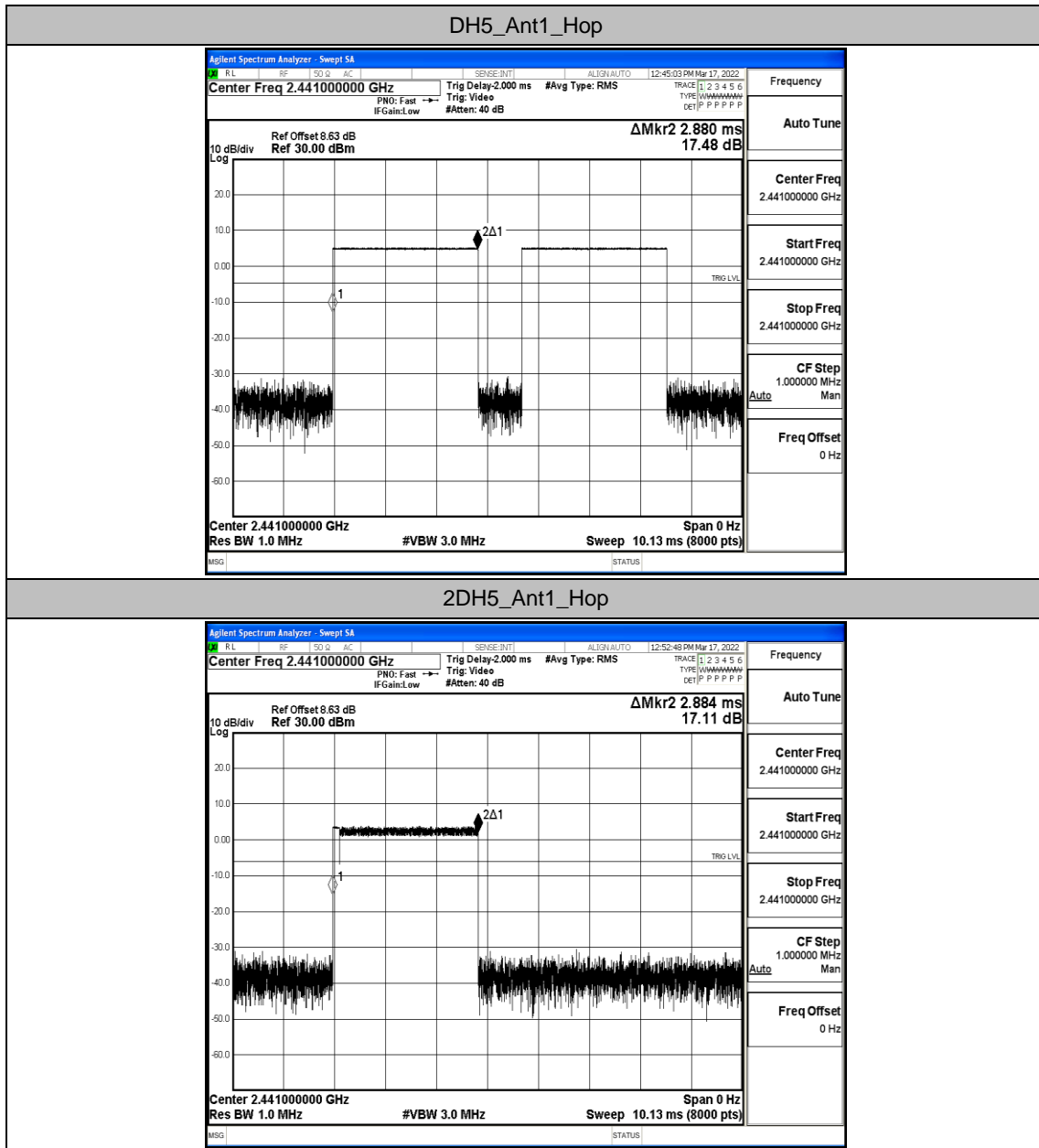
## Appendix A.4: Time of occupancy

### Test Result

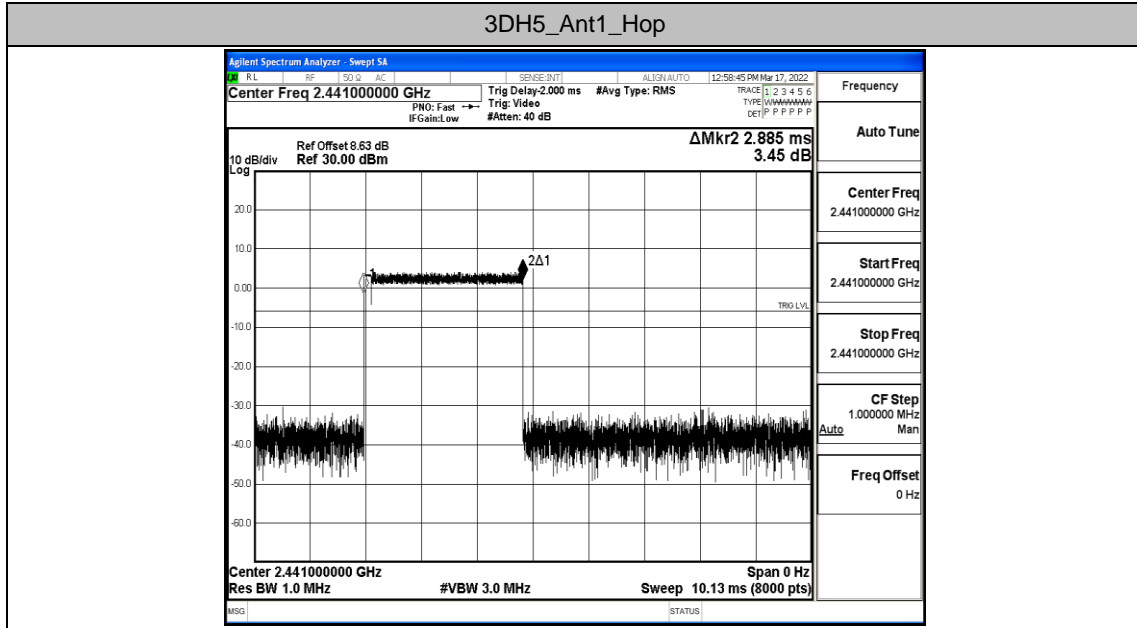
TestMode	Antenna	Channel	BurstWidth [ms]	TotalHops [Num]	Result[s]	Limit[s]	Verdict
DH5	Ant1	Hop	2.88	106.67	0.307	≤0.4	PASS
2DH5	Ant1	Hop	2.88	106.67	0.308	≤0.4	PASS
3DH5	Ant1	Hop	2.89	106.67	0.308	≤0.4	PASS



### Test Graphs









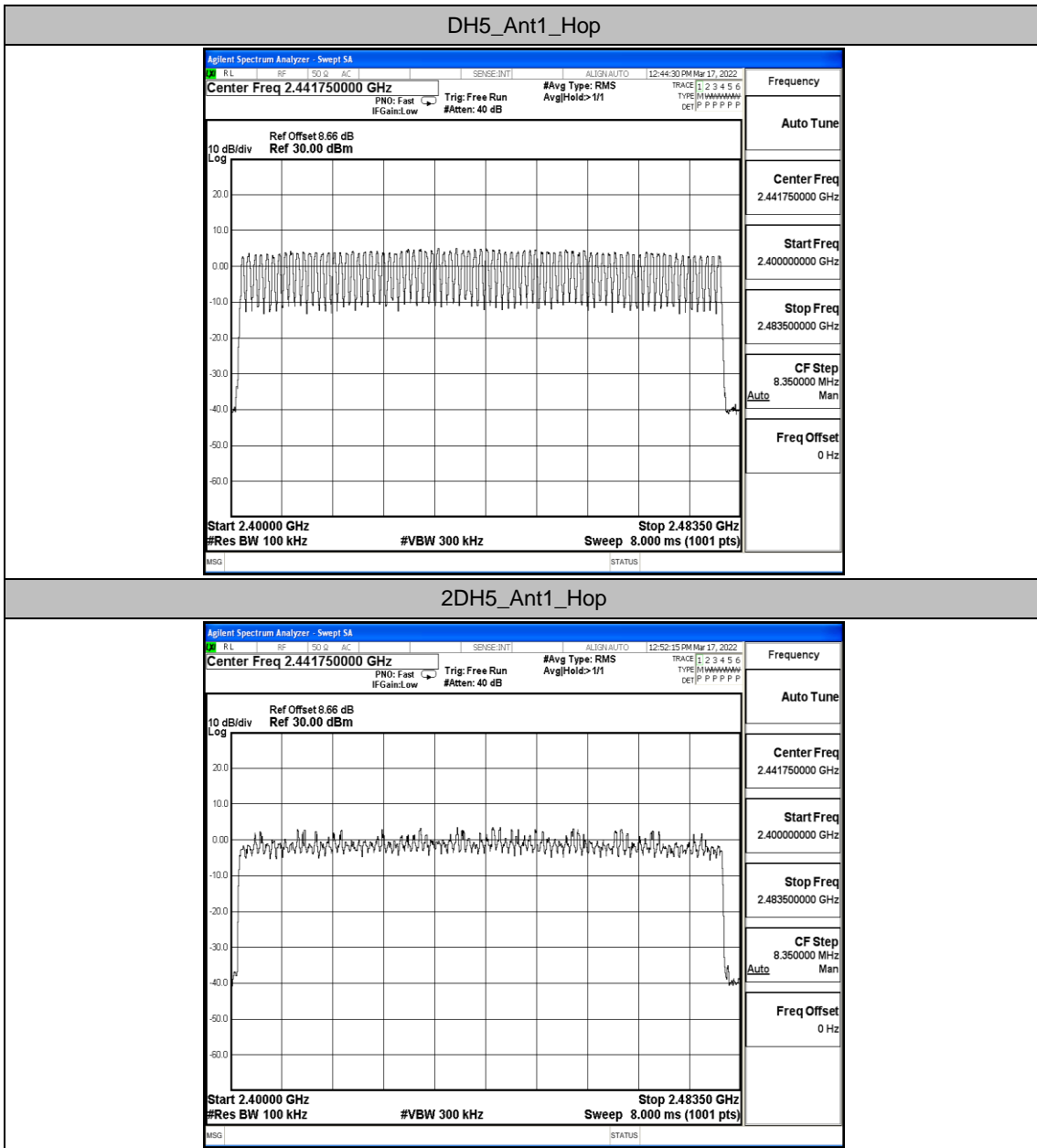
## Appendix A.5: Number of hopping channels

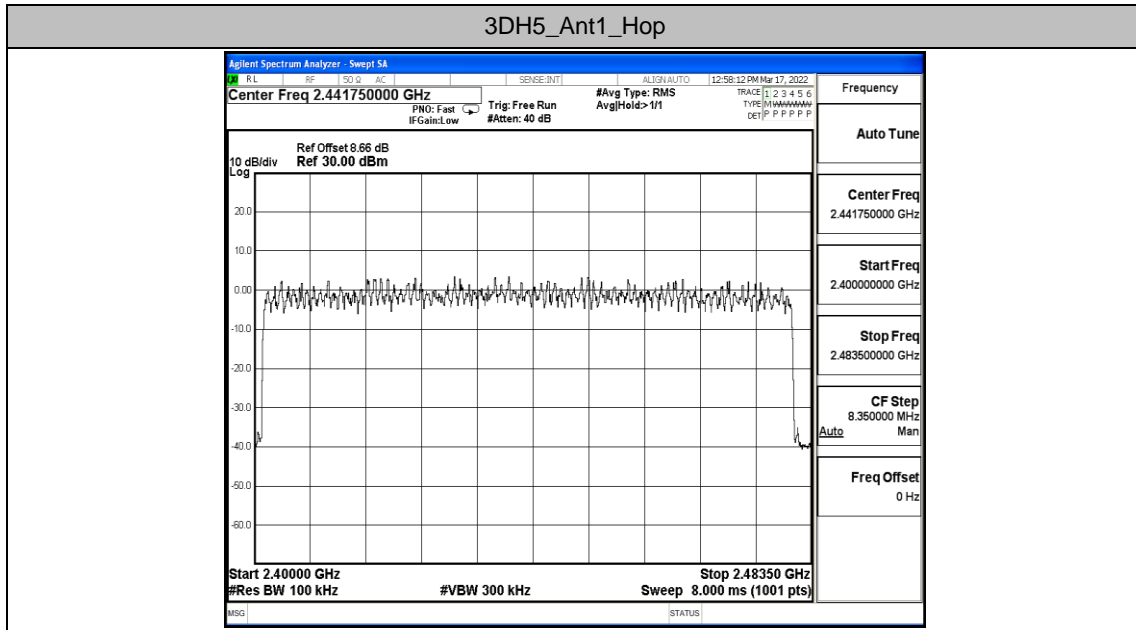
### Test Result

TestMode	Antenna	Channel	Result[Num]	Limit[Num]	Verdict
DH5	Ant1	Hop	79	≥15	PASS
2DH5	Ant1	Hop	79	≥15	PASS
3DH5	Ant1	Hop	79	≥15	PASS



### Test Graphs







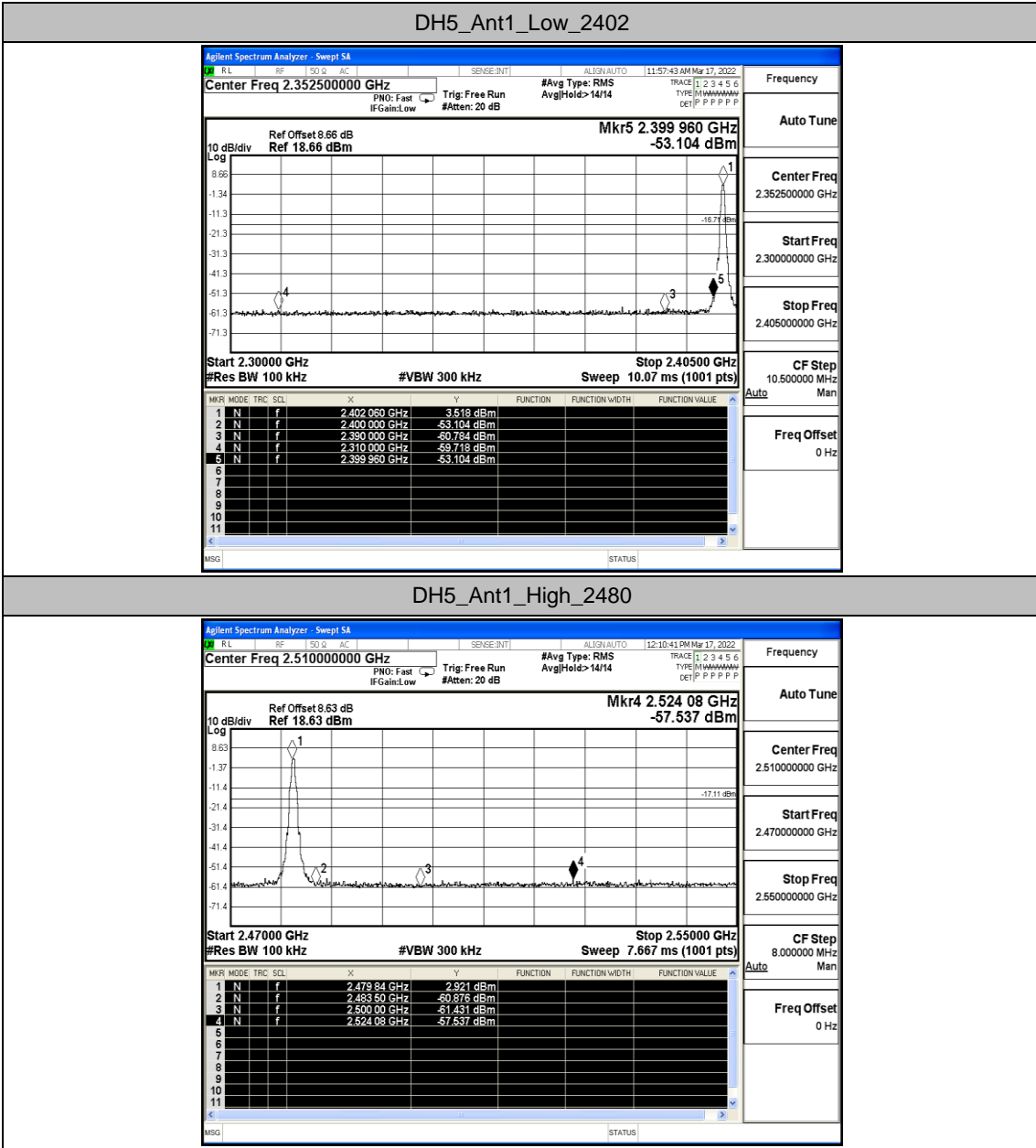
## Appendix A.6: Band edge measurements

### Test Result

TestMode	Antenna	ChName	Channel	RefLevel [dBm]	Result [dBm]	Limit [dBm]	Verdict
DH5	Ant1	Low	2402	3.29	-53.1	≤-16.71	PASS
		High	2480	2.89	-57.54	≤-17.11	PASS
		Low	Hop_2402	2.81	-58.06	≤-17.19	PASS
		High	Hop_2480	3.63	-57.31	≤-16.38	PASS
2DH5	Ant1	Low	2402	1.90	-54.04	≤-18.1	PASS
		High	2480	1.81	-57.45	≤-18.2	PASS
		Low	Hop_2402	1.15	-58.75	≤-18.85	PASS
		High	Hop_2480	2.02	-57.81	≤-17.98	PASS
3DH5	Ant1	Low	2402	1.99	-55.4	≤-18.01	PASS
		High	2480	0.96	-56.88	≤-19.04	PASS
		Low	Hop_2402	-0.63	-59.06	≤-20.63	PASS
		High	Hop_2480	1.30	-57.81	≤-18.7	PASS

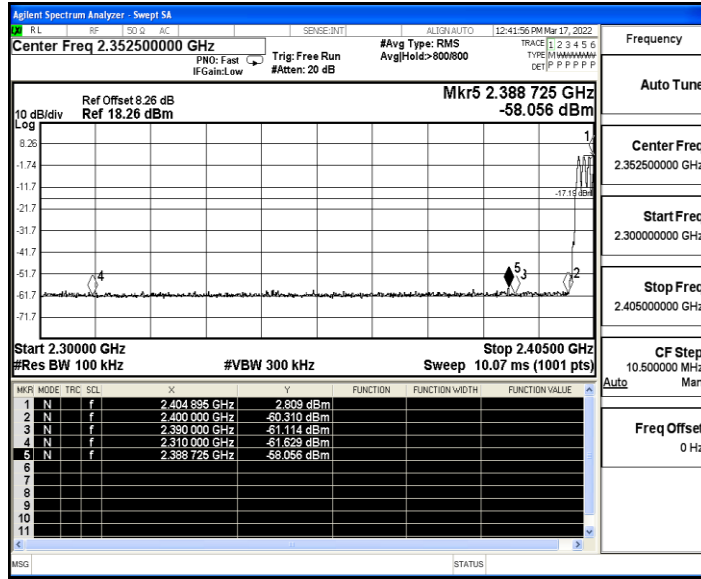


### Test Graphs

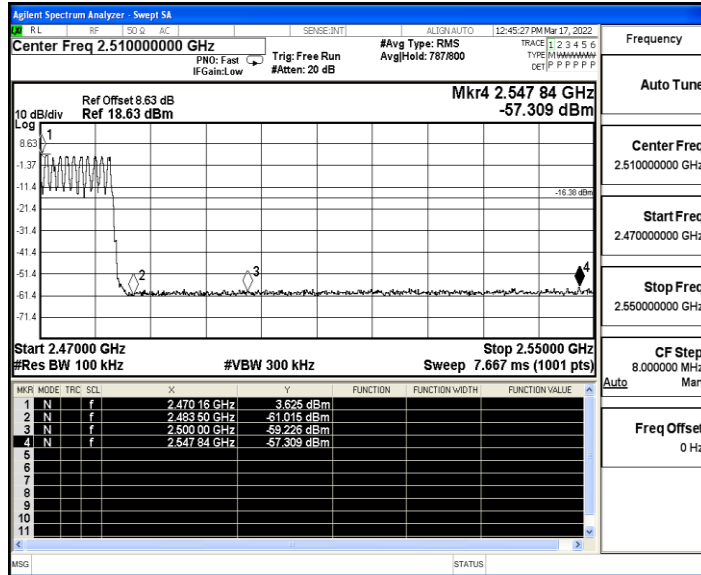




DH5\_Ant1\_Low\_Hop\_2402

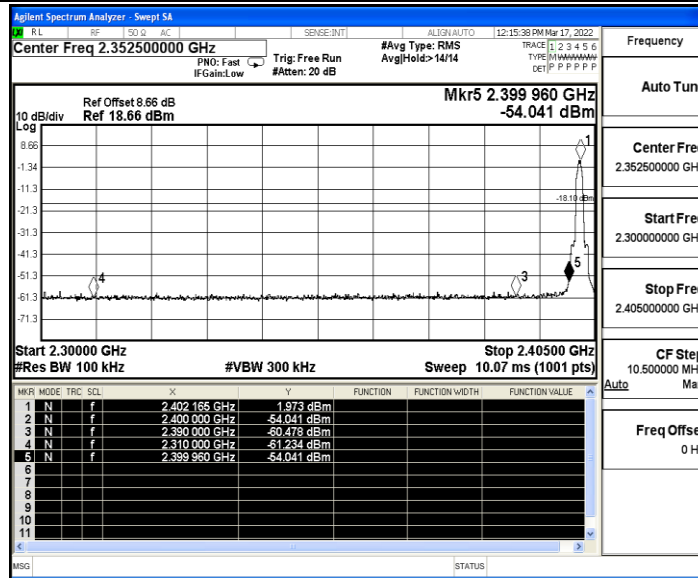


DH5\_Ant1\_High\_Hop\_2480

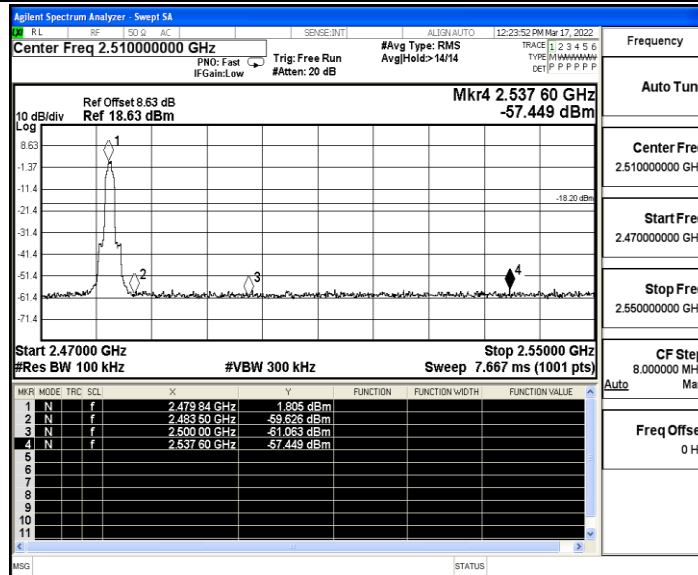




2DH5\_Ant1\_Low\_2402



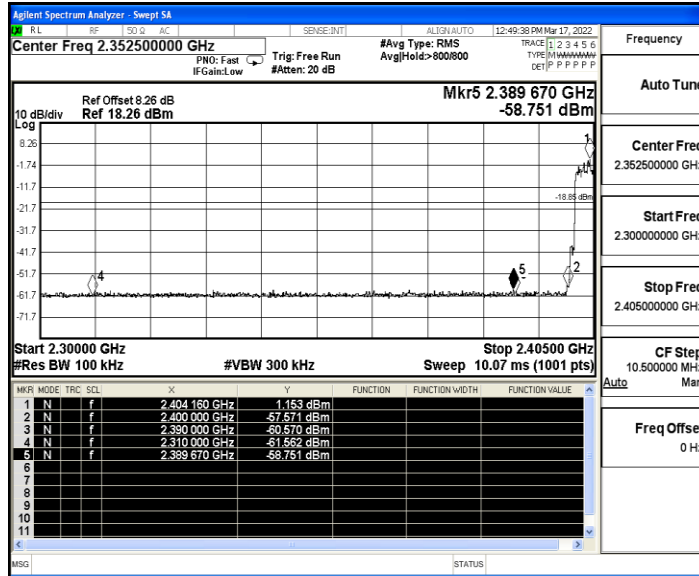
2DH5\_Ant1\_High\_2480



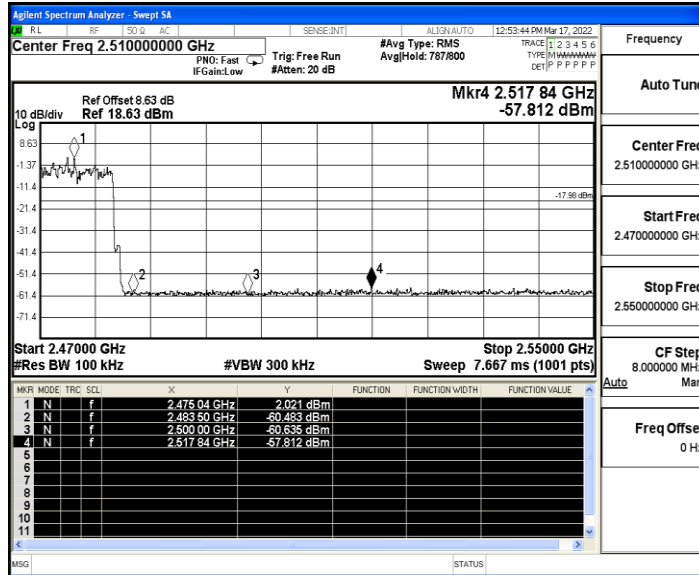




2DH5\_Ant1\_Low\_Hop\_2402

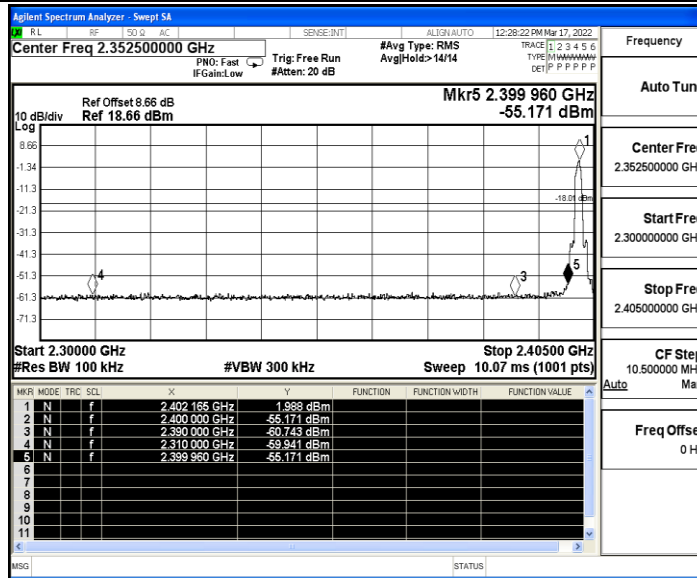


2DH5\_Ant1\_High\_Hop\_2480

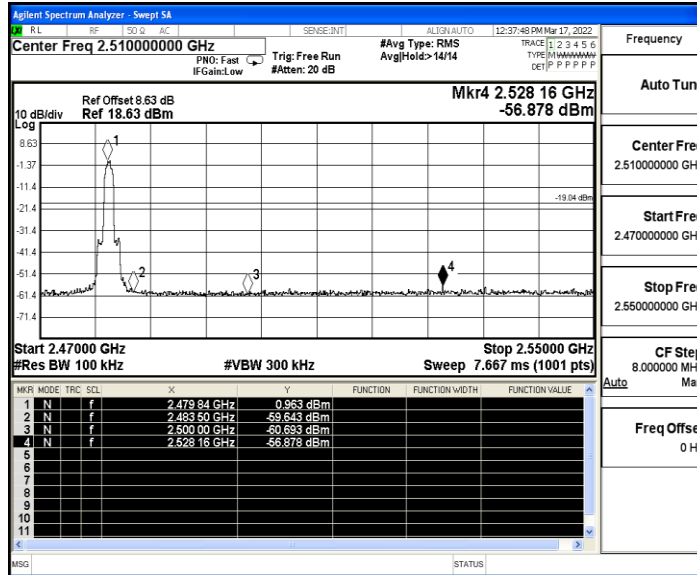




3DH5\_Ant1\_Low\_2402

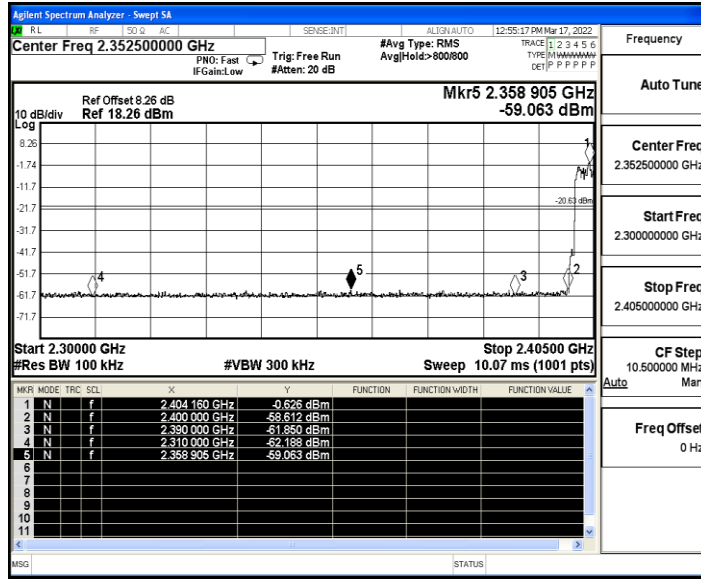


3DH5\_Ant1\_High\_2480

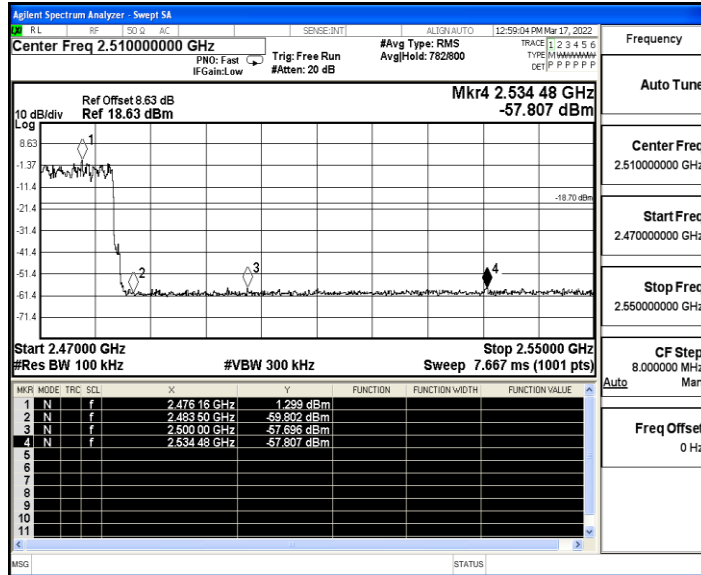




3DH5\_Ant1\_Low\_Hop\_2402



3DH5\_Ant1\_High\_Hop\_2480





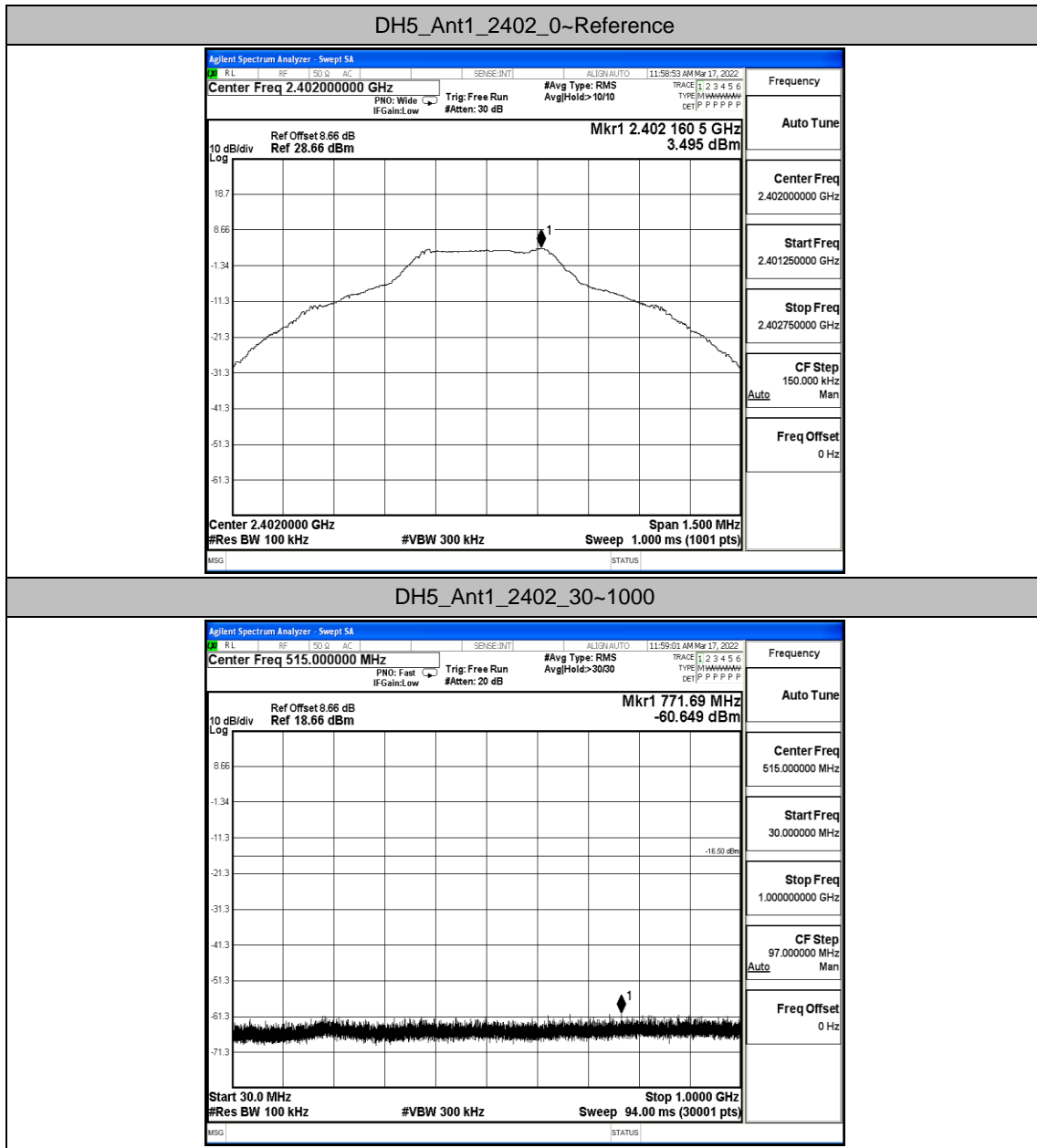
## Appendix A.7: Conducted Spurious Emission

### Test Result

TestMode	Antenna	Channel	FreqRange [MHz]	RefLevel [dBm]	Result [dBm]	Limit [dBm]	Verdict
DH5	Ant1	2402	Reference	3.50	3.50	---	PASS
			30~1000	3.50	-60.65	≤-16.5	PASS
			1000~26500	3.50	-46.1	≤-16.5	PASS
		2441	Reference	4.73	4.73	---	PASS
			30~1000	4.73	-60.58	≤-15.27	PASS
			1000~26500	4.73	-45.04	≤-15.27	PASS
		2480	Reference	3.10	3.10	---	PASS
			30~1000	3.10	-60.4	≤-16.9	PASS
			1000~26500	3.10	-46.36	≤-16.9	PASS
2DH5	Ant1	2402	Reference	1.86	1.86	---	PASS
			30~1000	1.86	-60.72	≤-18.14	PASS
			1000~26500	1.86	-46.24	≤-18.14	PASS
		2441	Reference	3.24	3.24	---	PASS
			30~1000	3.24	-60.01	≤-16.76	PASS
			1000~26500	3.24	-46.15	≤-16.76	PASS
		2480	Reference	1.61	1.61	---	PASS
			30~1000	1.61	-60	≤-18.39	PASS
			1000~26500	1.61	-46.02	≤-18.39	PASS
3DH5	Ant1	2402	Reference	1.96	1.96	---	PASS
			30~1000	1.96	-60.35	≤-18.04	PASS
			1000~26500	1.96	-45.92	≤-18.04	PASS
		2441	Reference	3.35	3.35	---	PASS
			30~1000	3.35	-61.13	≤-16.65	PASS
			1000~26500	3.35	-45.93	≤-16.65	PASS
		2480	Reference	1.71	1.71	---	PASS
			30~1000	1.71	-60.86	≤-18.29	PASS
			1000~26500	1.71	-44.73	≤-18.29	PASS

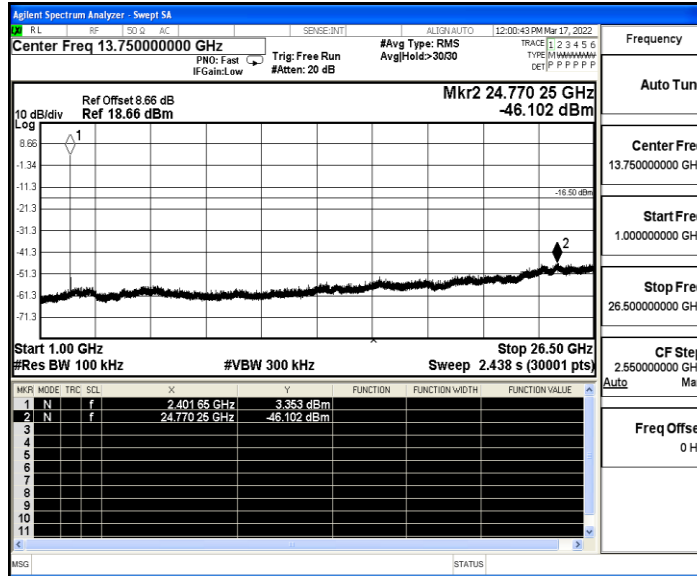


### Test Graphs

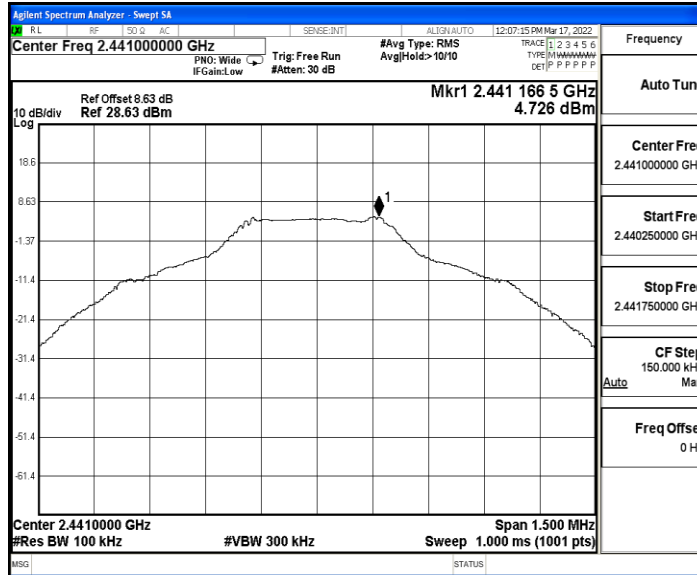




DH5\_Ant1\_2402\_1000~26500

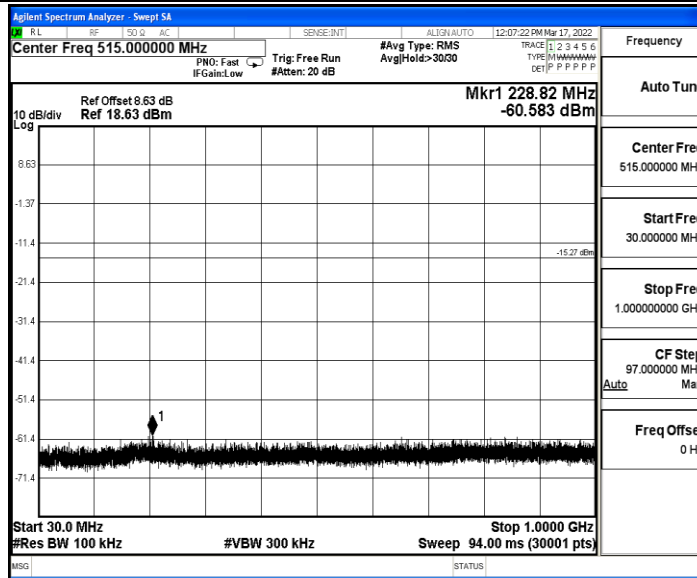


DH5\_Ant1\_2441\_0~Reference

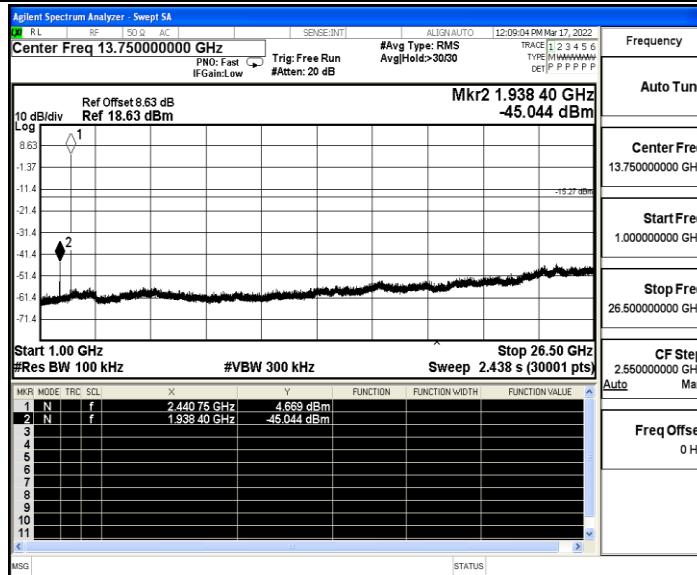




DH5\_Ant1\_2441\_30~1000

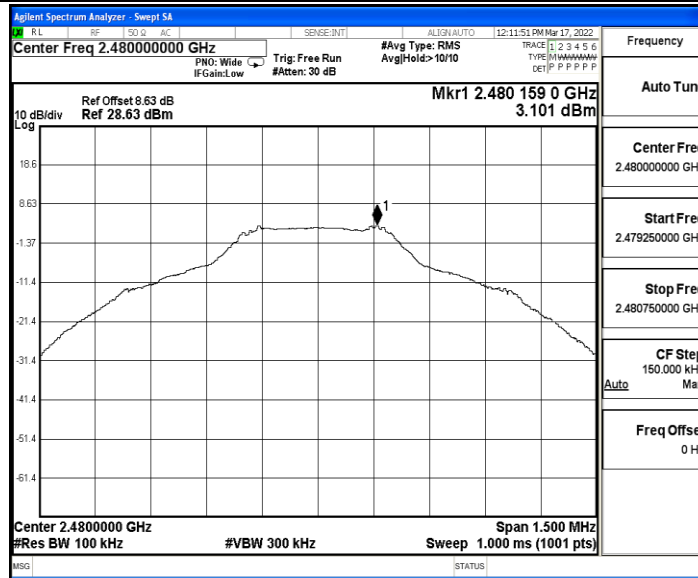


DH5\_Ant1\_2441\_1000~26500

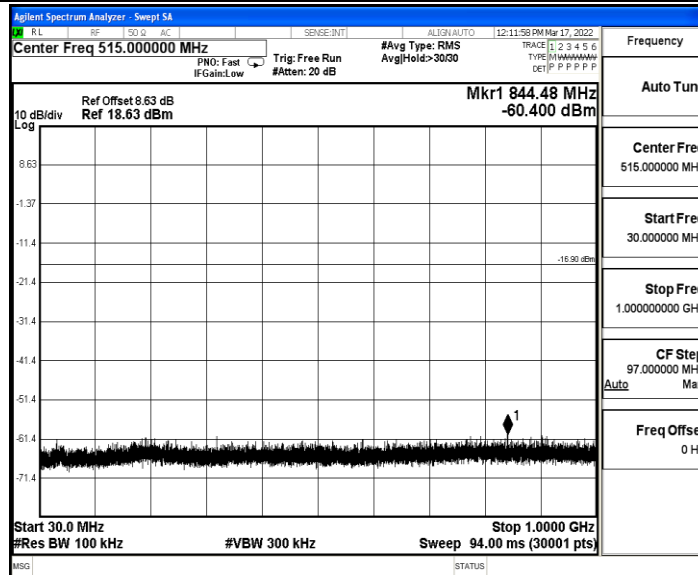




### DH5\_Ant1\_2480\_0~Reference



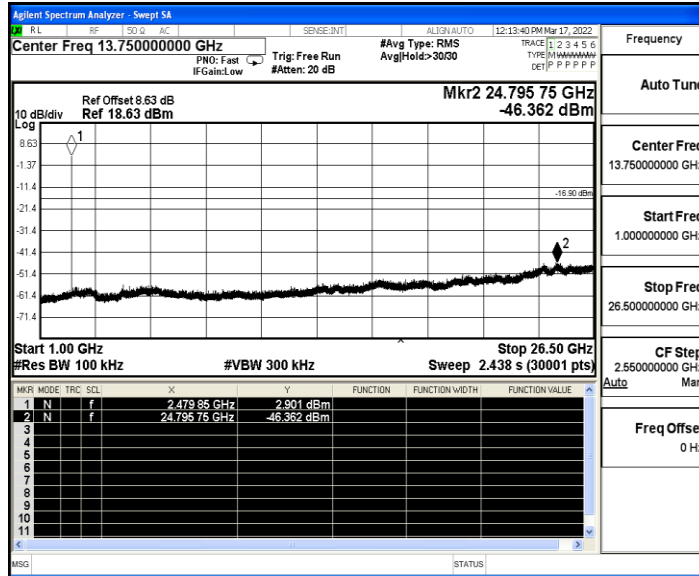
### DH5\_Ant1\_2480\_30~1000



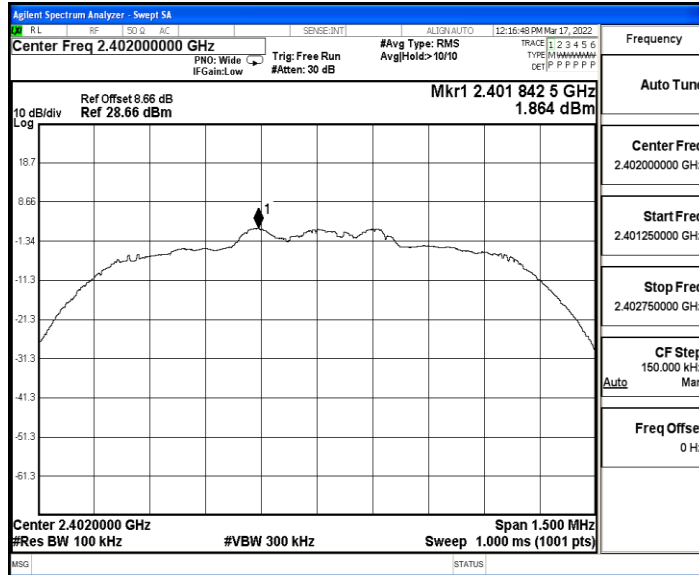




DH5\_Ant1\_2480\_1000~26500

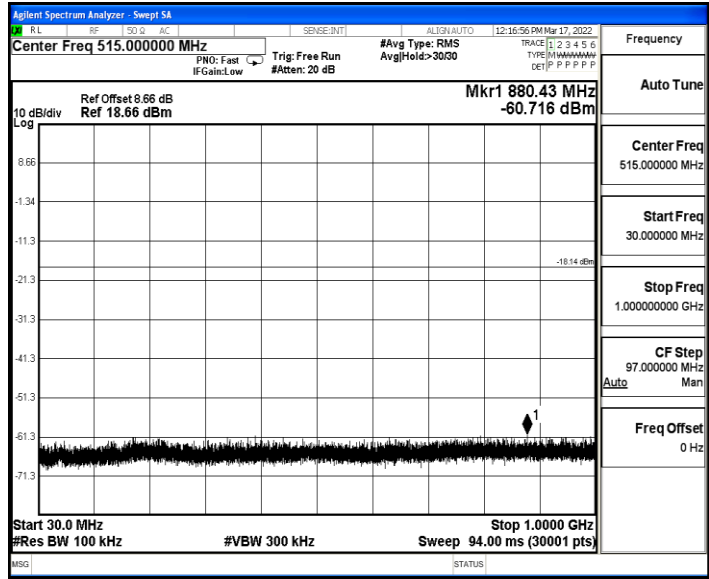


2DH5\_Ant1\_2402\_0~Reference

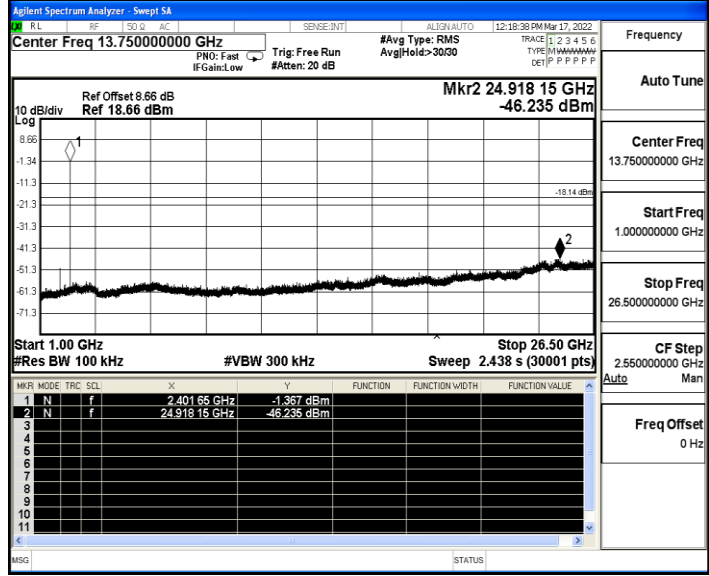




2DH5\_Ant1\_2402\_30~1000

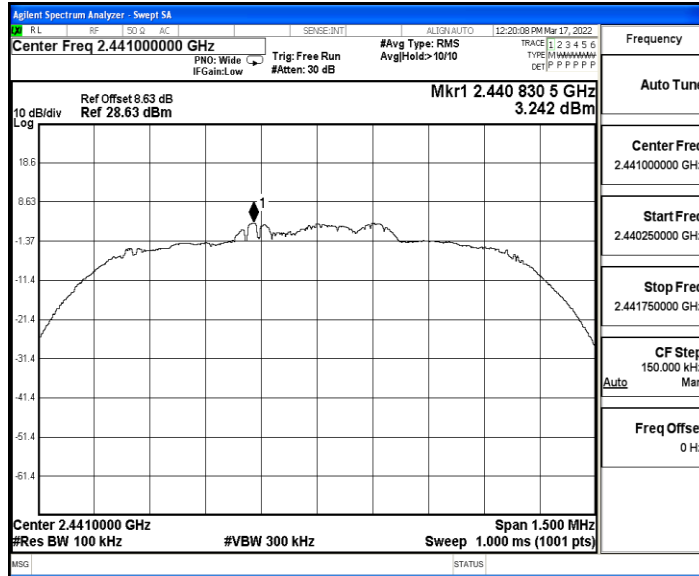


2DH5\_Ant1\_2402\_1000~26500

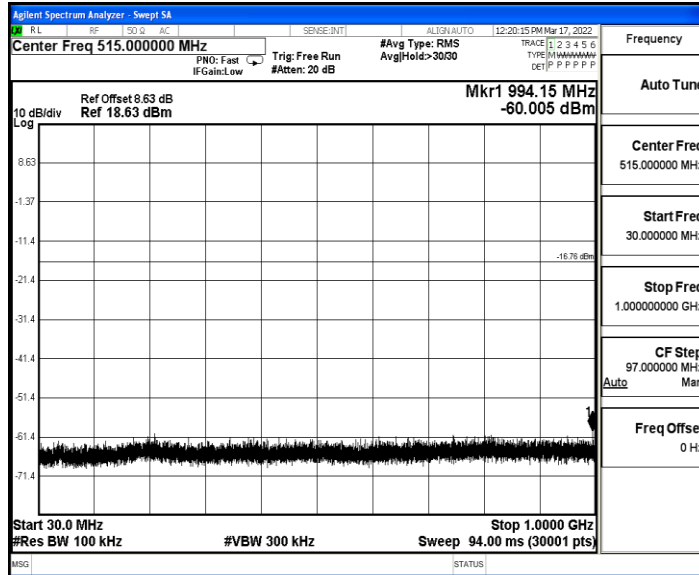




2DH5\_Ant1\_2441\_0~Reference

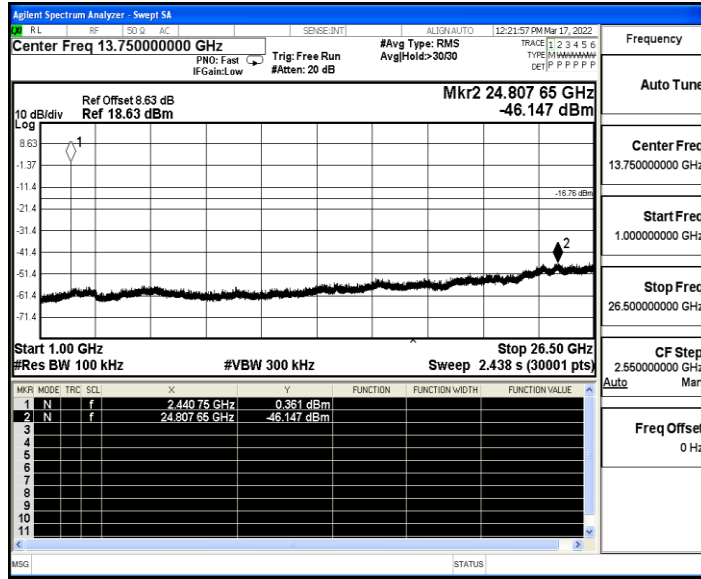


2DH5\_Ant1\_2441\_30~1000

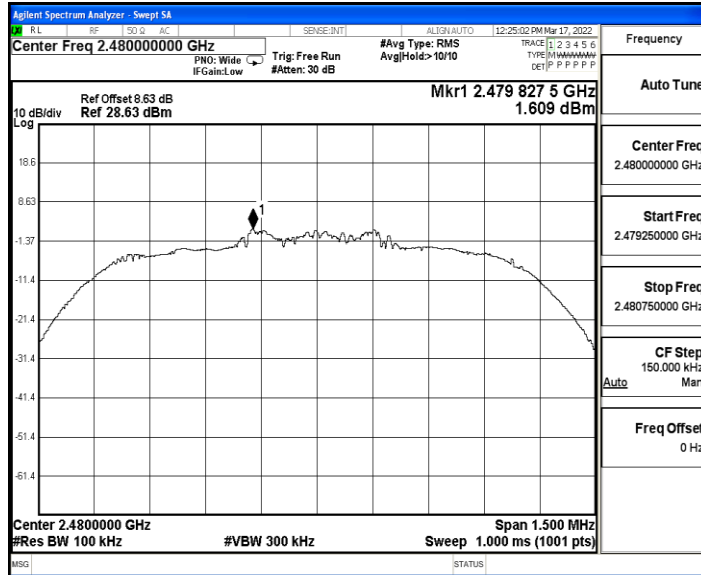




2DH5\_Ant1\_2441\_1000~26500

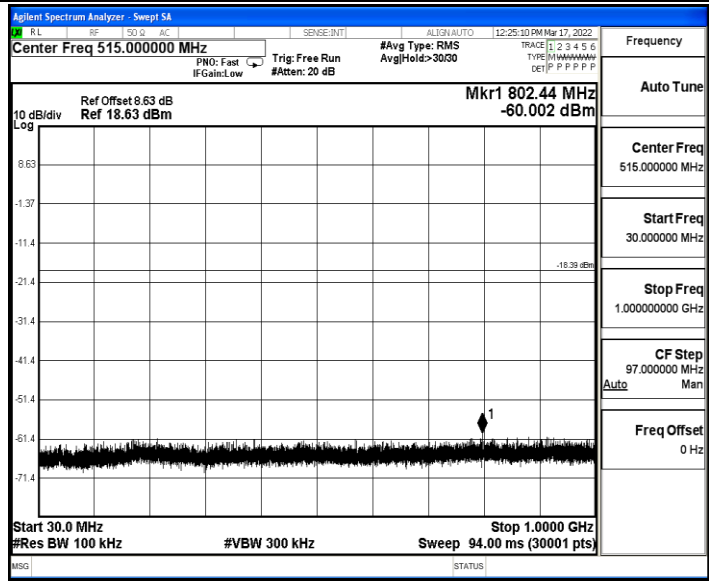


2DH5\_Ant1\_2480\_0~Reference

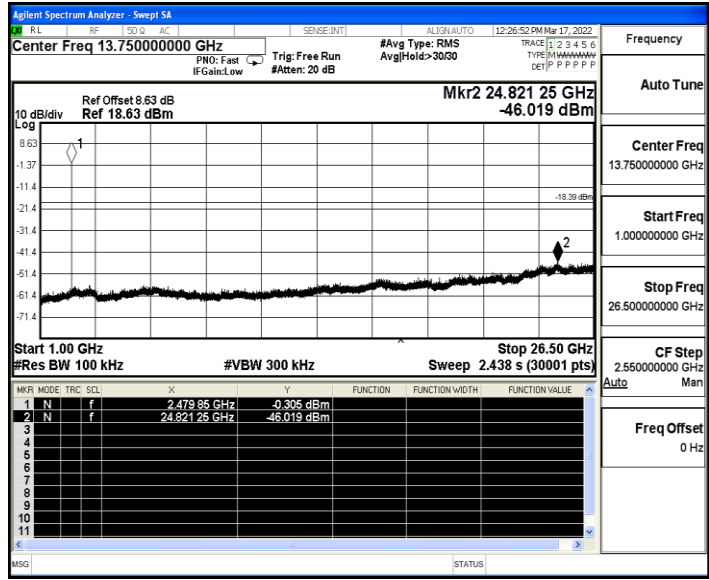




2DH5\_Ant1\_2480\_30~1000

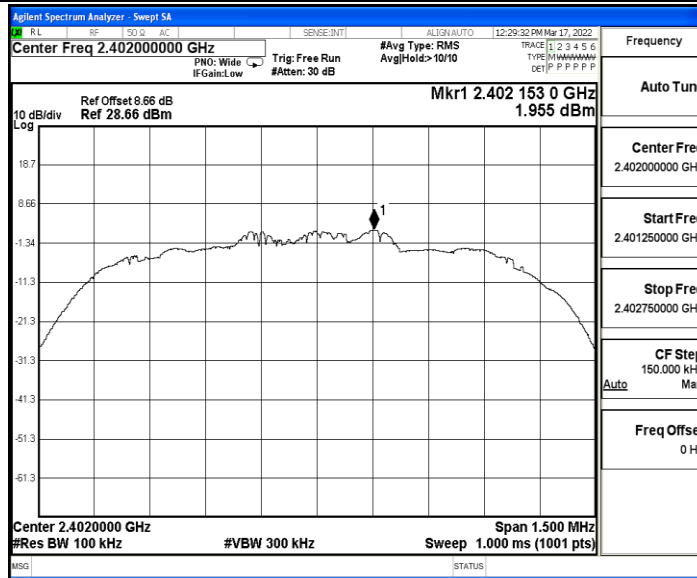


2DH5\_Ant1\_2480\_1000~26500

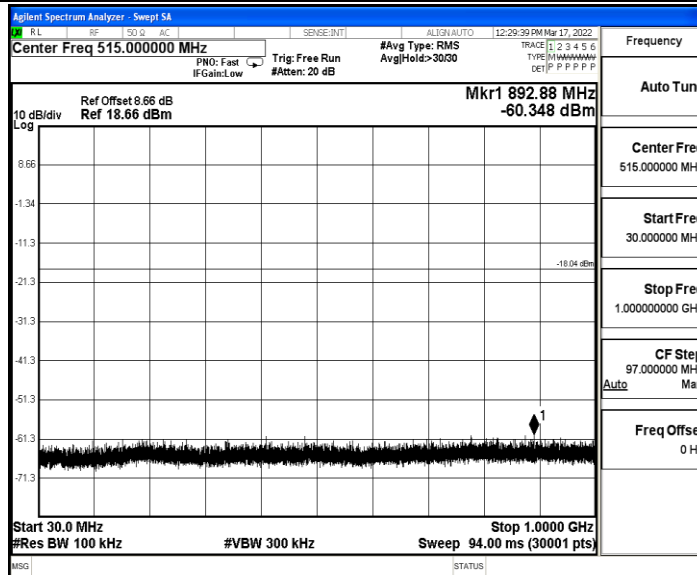




### 3DH5\_Ant1\_2402\_0~Reference

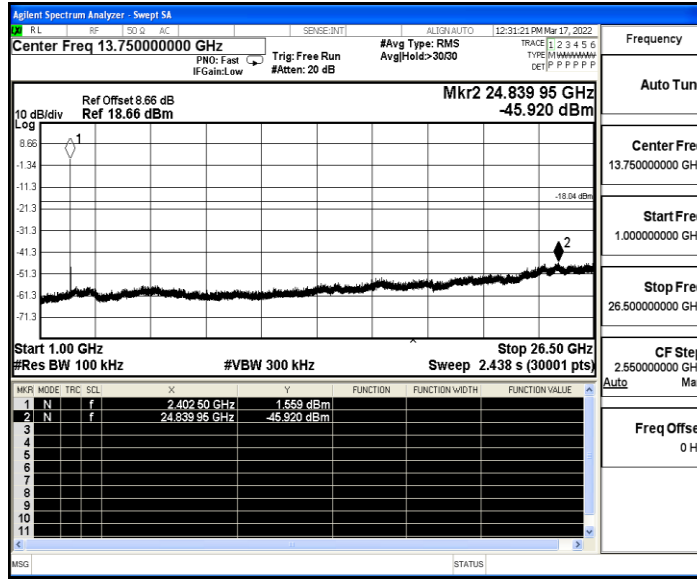


### 3DH5\_Ant1\_2402\_30~1000

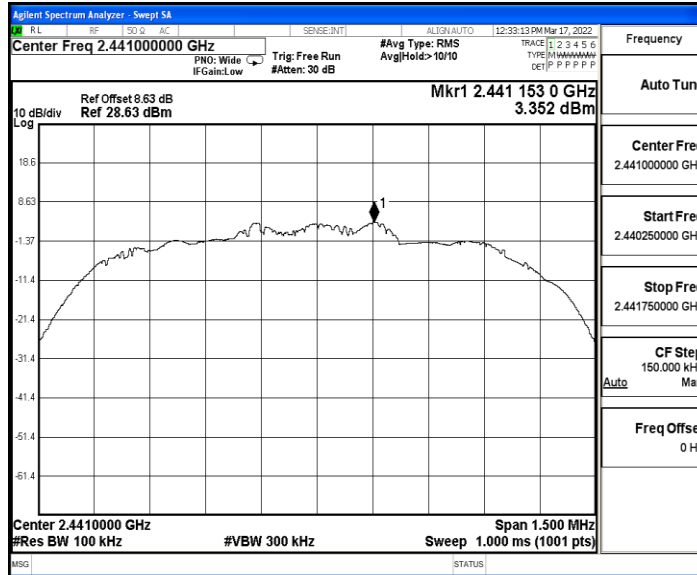




3DH5\_Ant1\_2402\_1000~26500

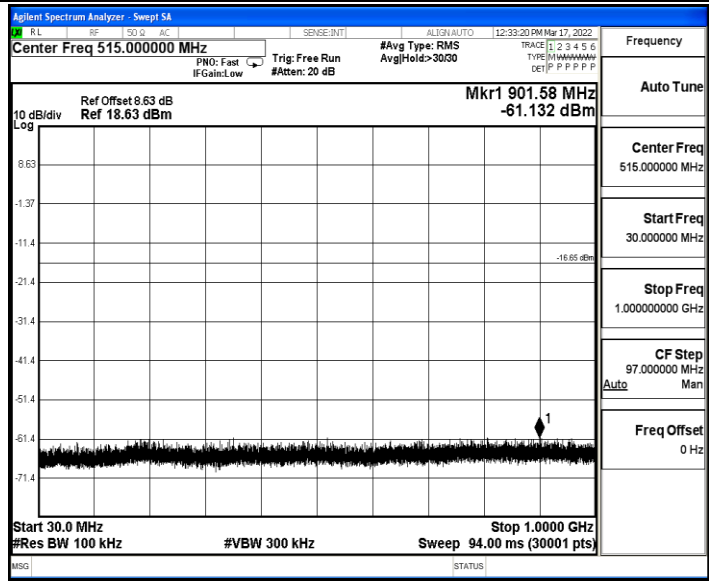


3DH5\_Ant1\_2441\_0~Reference

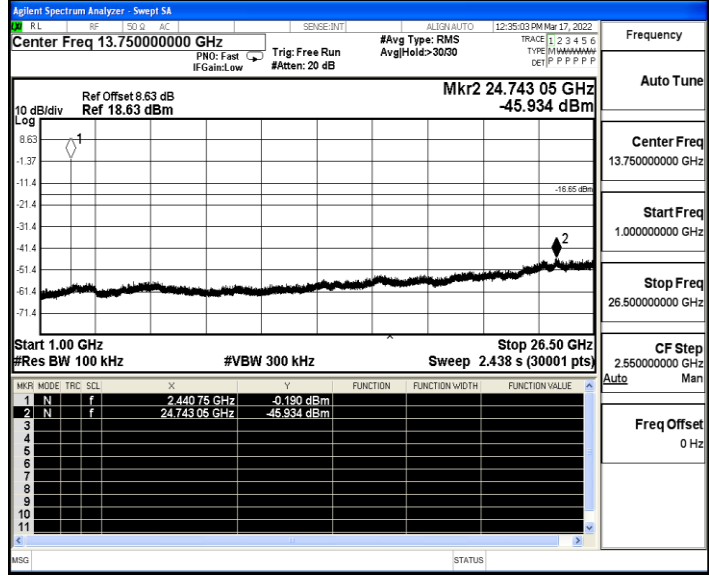




3DH5\_Ant1\_2441\_30~1000



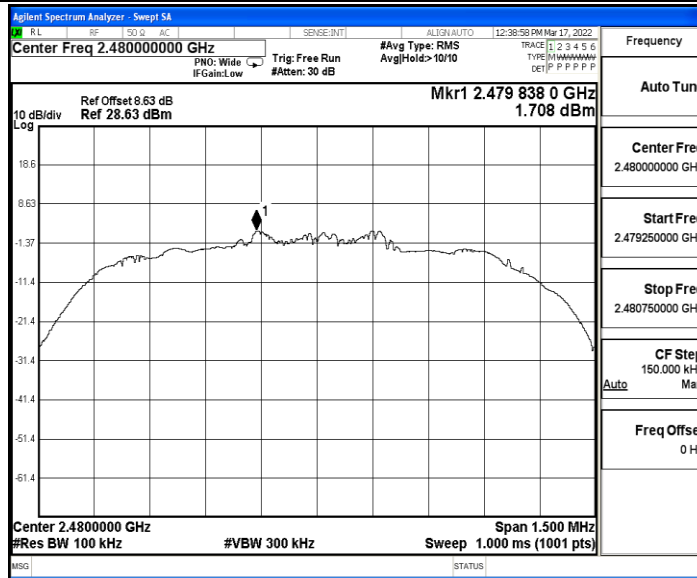
3DH5\_Ant1\_2441\_1000~26500



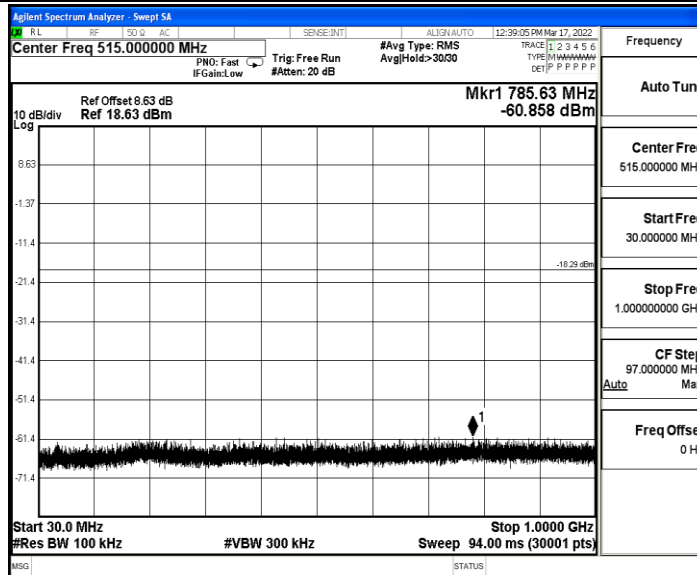


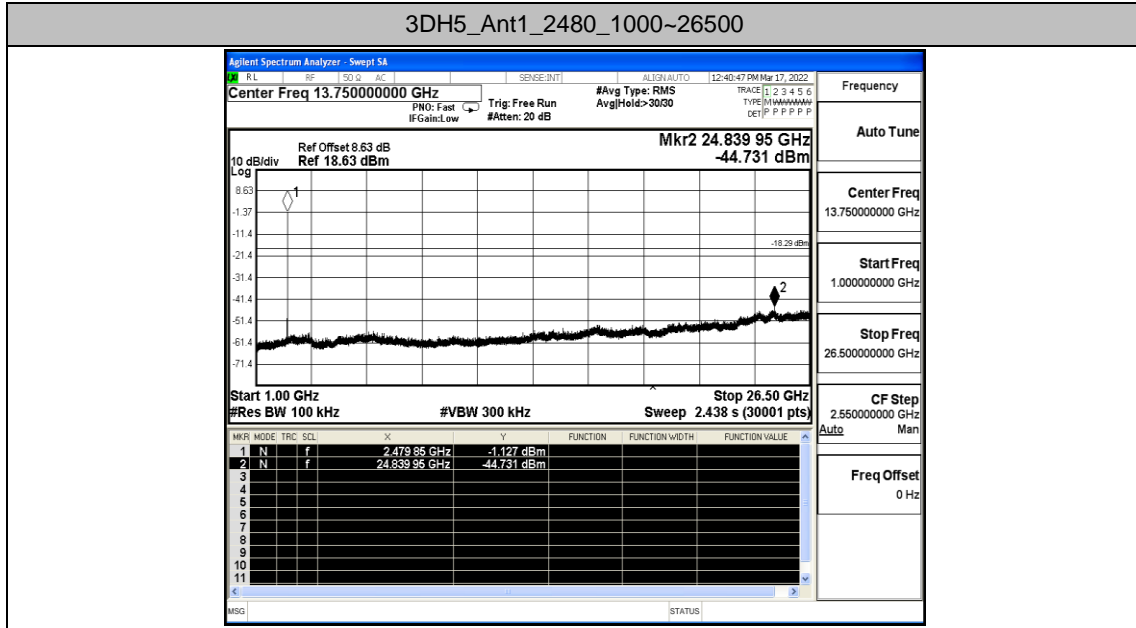


### 3DH5\_Ant1\_2480\_0~Reference



### 3DH5\_Ant1\_2480\_30~1000







## Appendix A.8: Emissions in Restricted Bands

### Test Result

TestMode	Antenna	ChName	Channel	Detector	Freq. [MHz]	Result [dBm]	Limit [dBm]	Result [dBuV/m]	Limit [dBuV/m]	Verdict
DH5	Ant1	Low	2402	AV	2310.000	-58	≤-41.20	37.20	≤54	PASS
				AV	2389.670	-57.49	≤-41.20	37.71	≤54	PASS
				AV	2390.000	-57.57	≤-41.20	37.63	≤54	PASS
				Peak	2310.000	-49	≤-21.20	46.20	≤74	PASS
				Peak	2365.730	-46.09	≤-21.20	49.11	≤74	PASS
				Peak	2390.000	-47.93	≤-21.20	47.27	≤74	PASS
		High	2480	AV	2483.500	-53.43	≤-41.20	41.77	≤54	PASS
				AV	2483.520	-53.43	≤-41.20	41.77	≤54	PASS
				AV	2500.000	-57.07	≤-41.20	38.13	≤54	PASS
				Peak	2483.500	-46.05	≤-21.20	49.15	≤74	PASS
				Peak	2483.760	-45.05	≤-21.20	50.15	≤74	PASS
				Peak	2500.000	-47.68	≤-21.20	47.52	≤74	PASS
		Low	Hop_2402	Peak	2310.000	-48.88	≤-21.20	46.32	≤74	PASS
				Peak	2385.260	-46.29	≤-21.20	48.91	≤74	PASS
				Peak	2390.000	-48.88	≤-21.20	46.32	≤74	PASS
		High	Hop_2480	Peak	2483.500	-47.32	≤-21.20	47.88	≤74	PASS
				Peak	2485.200	-46.2	≤-21.20	49.00	≤74	PASS
				Peak	2500.000	-46.52	≤-21.20	48.68	≤74	PASS
2DH5	Ant1	Low	2402	AV	2310.000	-58.09	≤-41.20	37.11	≤54	PASS
				AV	2389.355	-57.45	≤-41.20	37.75	≤54	PASS
				AV	2390.000	-57.58	≤-41.20	37.62	≤54	PASS
				Peak	2310.000	-48.83	≤-21.20	46.37	≤74	PASS
				Peak	2382.950	-46.16	≤-21.20	49.04	≤74	PASS
				Peak	2390.000	-47.65	≤-21.20	47.55	≤74	PASS
		High	2480	AV	2483.500	-53.54	≤-41.20	41.66	≤54	PASS
				AV	2483.520	-53.54	≤-41.20	41.66	≤54	PASS
				AV	2500.000	-57.13	≤-41.20	38.07	≤54	PASS
				Peak	2483.500	-45.82	≤-21.20	49.38	≤74	PASS
				Peak	2488.560	-45.7	≤-21.20	49.50	≤74	PASS
				Peak	2500.000	-47.68	≤-21.20	47.52	≤74	PASS
		Low	Hop_2402	Peak	2310.000	-49.39	≤-21.20	45.81	≤74	PASS
				Peak	2387.045	-46.5	≤-21.20	48.70	≤74	PASS
				Peak	2390.000	-48.6	≤-21.20	46.60	≤74	PASS
		High	Hop_2480	Peak	2483.500	-47.56	≤-21.20	47.64	≤74	PASS
				Peak	2488.080	-46.11	≤-21.20	49.09	≤74	PASS
				Peak	2500.000	-48.15	≤-21.20	47.05	≤74	PASS
3DH5	Ant1	Low	2402	AV	2310.000	-57.95	≤-41.20	37.25	≤54	PASS



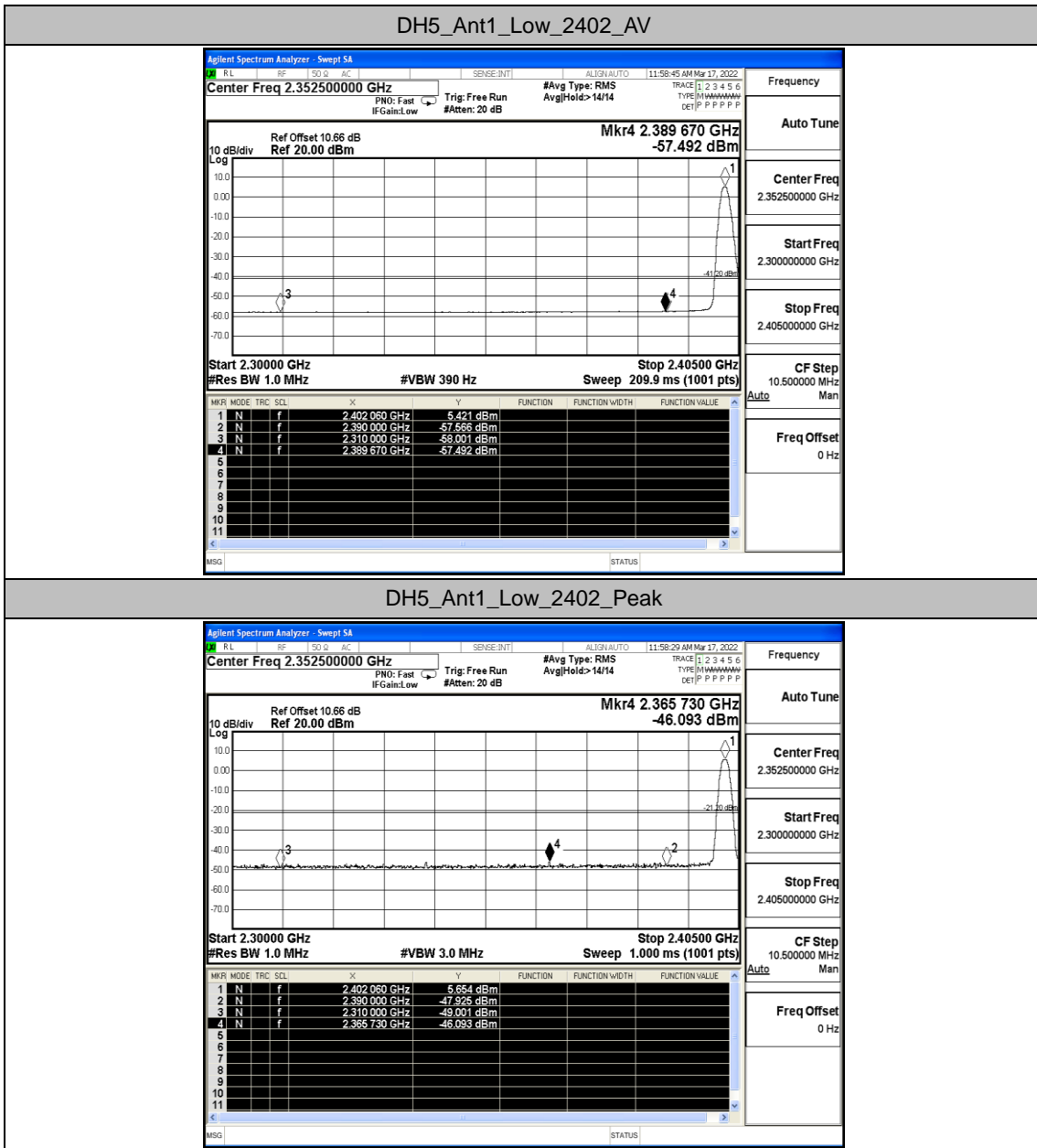
				AV	2389.670	-57.47	≤-41.20	37.73	≤54	PASS
				AV	2390.000	-57.54	≤-41.20	37.66	≤54	PASS
				Peak	2310.000	-48.19	≤-21.20	47.01	≤74	PASS
				Peak	2369.405	-46.28	≤-21.20	48.92	≤74	PASS
				Peak	2390.000	-47.88	≤-21.20	47.32	≤74	PASS
		High	2480	AV	2483.500	-53.19	≤-41.20	42.01	≤54	PASS
				AV	2483.520	-53.19	≤-41.20	42.01	≤54	PASS
				AV	2500.000	-57.08	≤-41.20	38.12	≤54	PASS
				Peak	2483.500	-46.34	≤-21.20	48.86	≤74	PASS
				Peak	2484.160	-44.43	≤-21.20	50.77	≤74	PASS
				Peak	2500.000	-46.31	≤-21.20	48.89	≤74	PASS
		Low	Hop_24 02	Peak	2310.000	-49.22	≤-21.20	45.98	≤74	PASS
				Peak	2324.675	-46.58	≤-21.20	48.62	≤74	PASS
				Peak	2390.000	-48.7	≤-21.20	46.50	≤74	PASS
		High	Hop_24 80	Peak	2483.500	-48.23	≤-21.20	46.97	≤74	PASS
				Peak	2483.680	-46.03	≤-21.20	49.17	≤74	PASS
				Peak	2500.000	-47.46	≤-21.20	47.74	≤74	PASS

Note:

1. The Antenna Gain is compensated in the graph.
2. The limit in dBm for average detector is conversion from 54dBuV/m, according to 15.209(a). The limit in dBm for peak detector is 20dB above the limit of average detector in dBm.

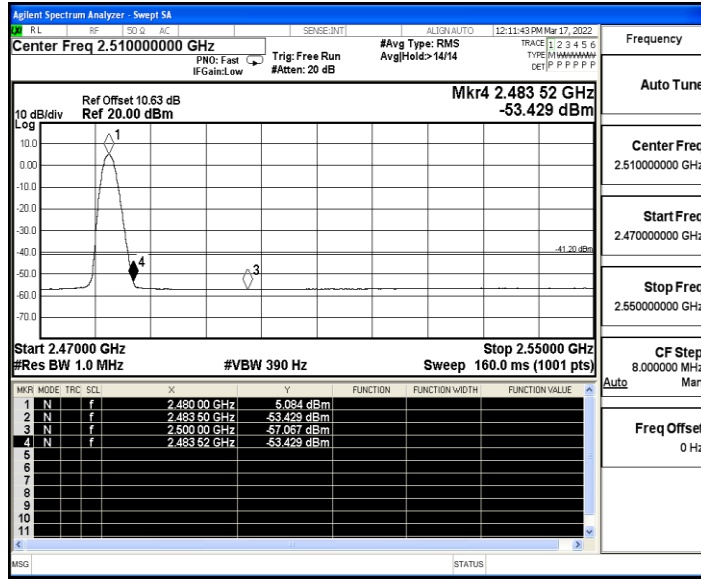


### Test Graphs

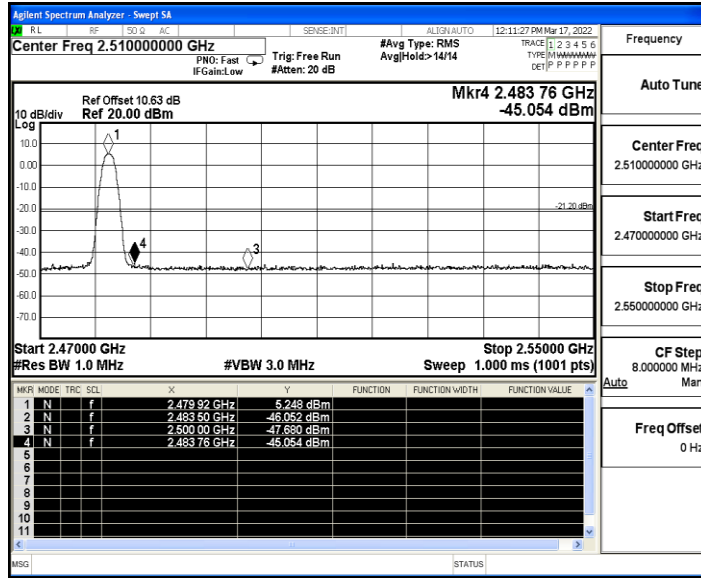




DH5\_Ant1\_High\_2480\_AV

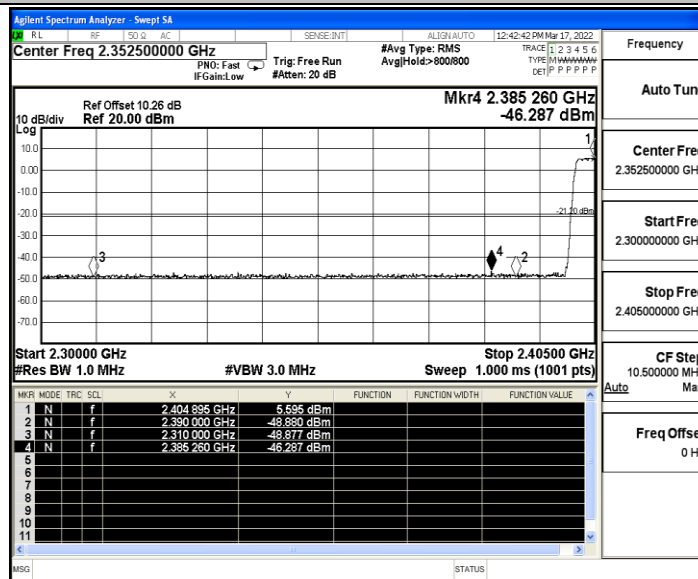


DH5\_Ant1\_High\_2480\_Peak

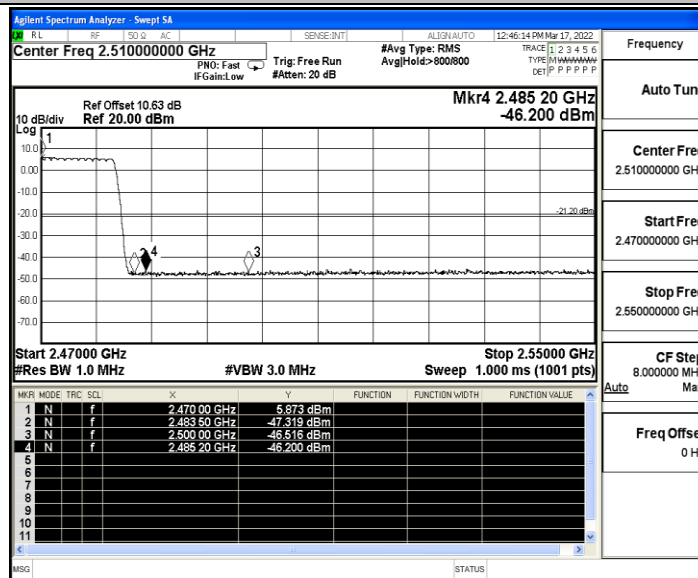




DH5\_Ant1\_Low\_Hop\_2402\_Peak

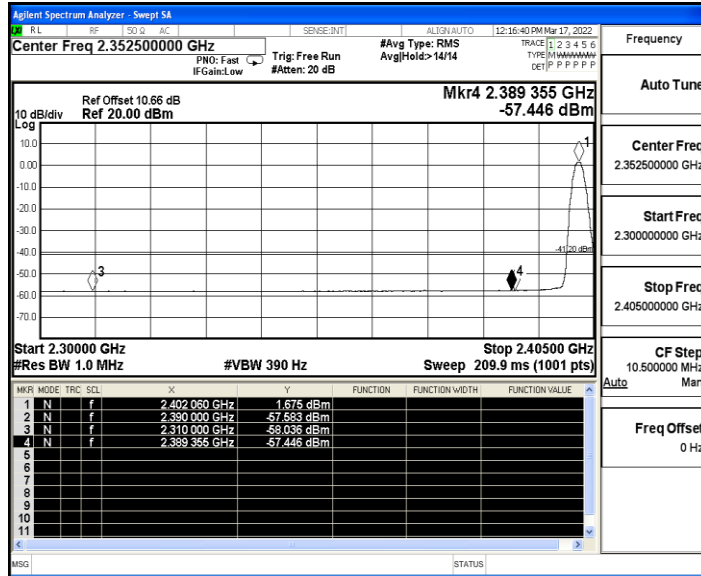


DH5\_Ant1\_High\_Hop\_2480\_Peak

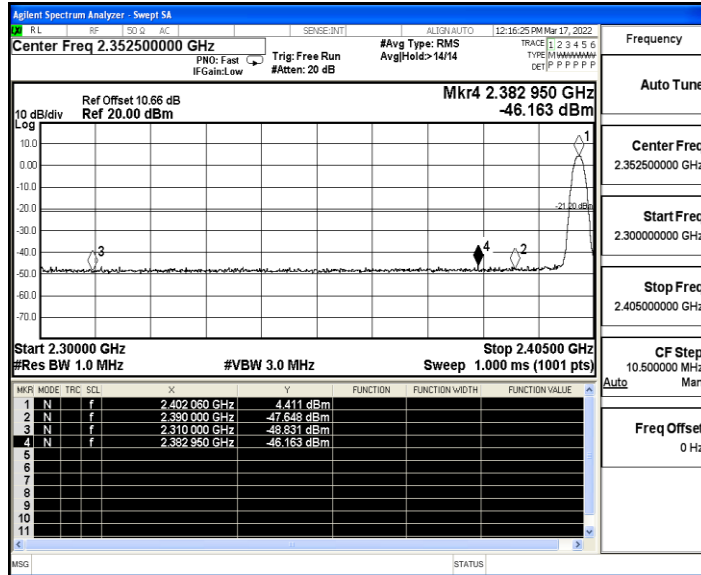




### 2DH5\_Ant1\_Low\_2402\_AV



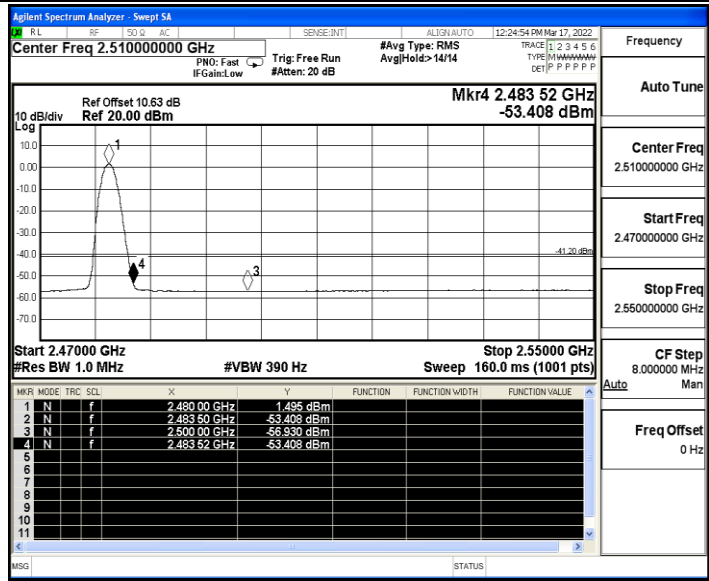
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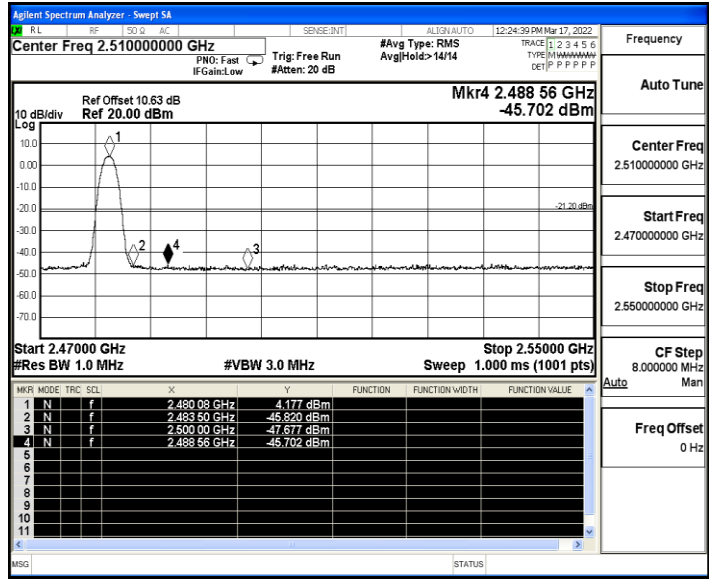




2DH5\_Ant1\_High\_2480\_AV

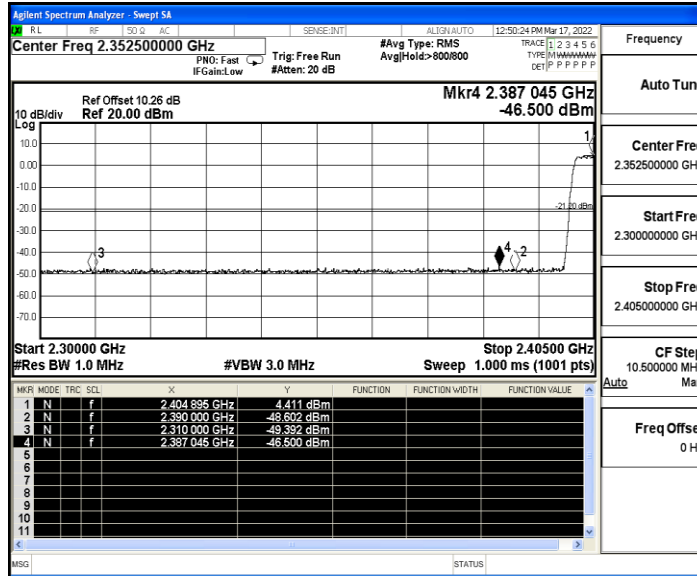


2DH5\_Ant1\_High\_2480\_Peak

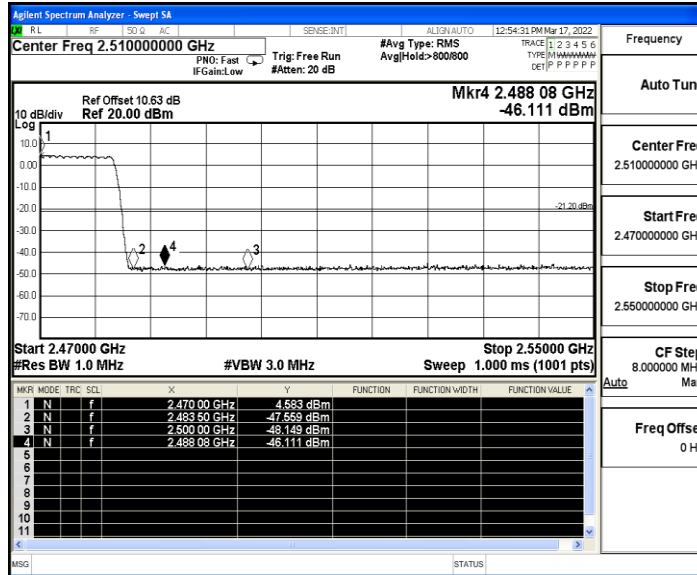




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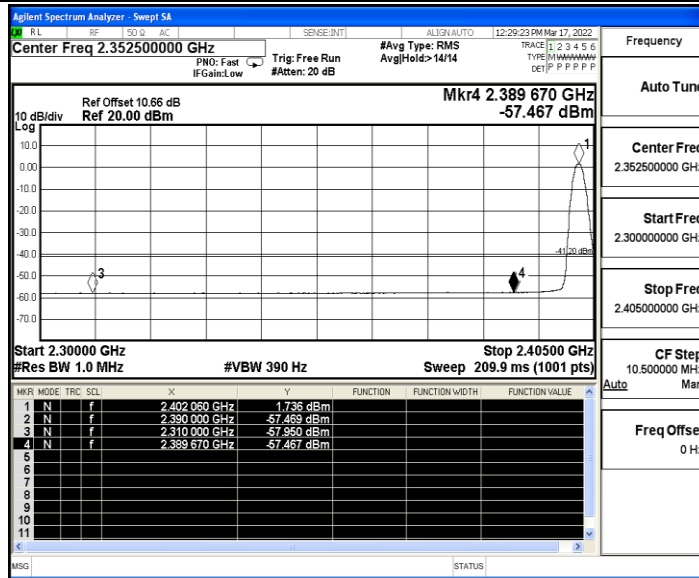


2DH5\_Ant1\_High\_Hop\_2480\_Peak

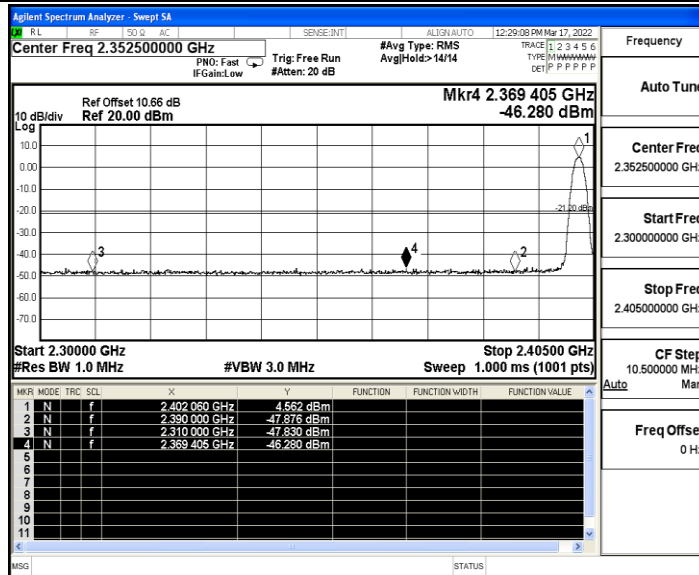




3DH5\_Ant1\_Low\_2402\_AV

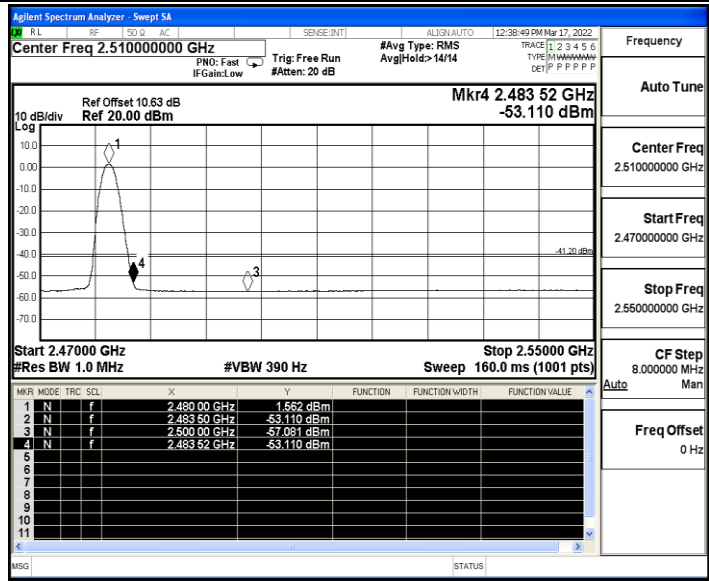


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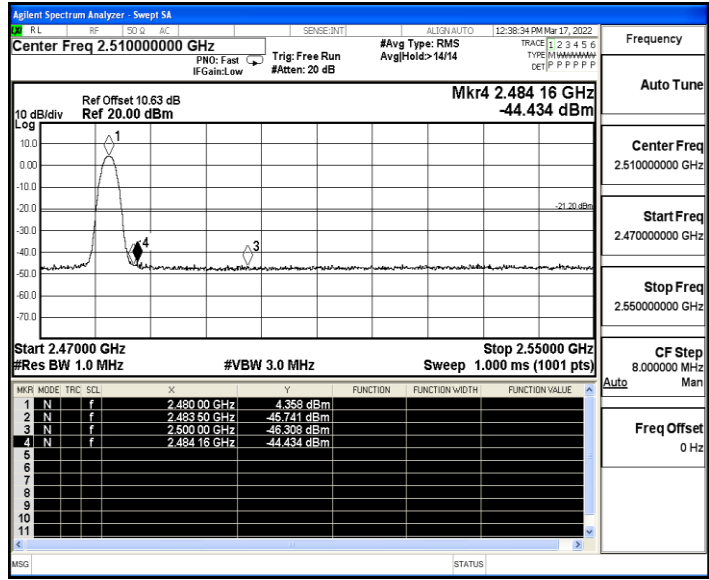




3DH5\_Ant1\_High\_2480\_AV

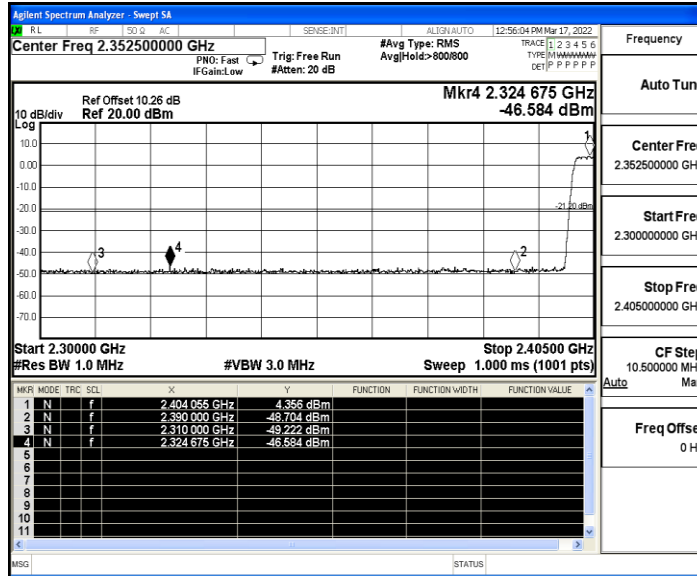


3DH5\_Ant1\_High\_2480\_Peak





3DH5\_Ant1\_Low\_Hop\_2402\_Peak



3DH5\_Ant1\_High\_Hop\_2480\_Peak

